

# GOD IS IN THE HOUSE

Submitted in fulfillment of part of the requirements for the degree of Magister in Architecture (Professional) in the Faculty of Engineering, Built Environment and Information Technology, University of Pretoria.

November 27, 2003

By Minette Steyn

Mentor and Study Leader: Prof Roger Fisher



# Contents

Summary	2
List of Figures and Tables	4
Introduction	8
Christianity and the Christian Church	12
The Story of Jesus	18
Art and the Church	28
Christian Symbolism	35
Principle Based Architecture	44
History of Church Architecture	46
The Church Today	70
Client Profile	72
The Project	82
Context Study	83
User and the Affected Parties	94
Precedent Studies	100
Designing Churches	123
Accommodation Schedule	127
Bblical Plants	143

Dreaming Design	150
Spatial Planning	152
Proportions	156
Concept Design	158
Baseline	166
Ceremonies	209
Memorial Wall	212
Chapel	218
Conclusion	226
Referred Works	227
Thanks	230
Appendix 1: Cost and Risk Analysis	233
Appendix 2 : Technical Drawings	238

# Summary

This dissertation encompasses a study on the Christian Faith and its resulting Architecture, as well as a design exploration and development of Church design.

The Moreleta Protestant Congregation situated in Pretoria East, represents the realistic client in this academic project. Where possible, the research and design exploration centered around the needs of the client. For the purpose of this academic project, some adaptations to their program have been made.

The chapters in this document have been placed in a specific order. When dealing with matters such as religion, it is essential to inform anyone reading the document on various important aspects concerning the faith, before a proper design discussion can commence. Therefore, it is essential for the reader to approach this document as a normal book where one reads it from cover to cover. Cross referencing is made throughout the document and will enhance the reader's understanding if adhered to.

From here the document will continue with a broad introduction followed by a theoretical research component, and then develop into design development, technical resolution and final design discussion.

- FIGURE A: Holy Fire. (Steyn, 2001)  
 FIGURE 1: The Beginning. (Steyn, 2000)  
 FIGURES 2-25: Images of Jesus and His contemporaries. (Marchiano, 2000)  
 FIGURE 26: Christian Art. (Keizer, 2003)  
 FIGURE 27: The young lady. (Covey, 1994:25)  
 FIGURE 28: Road Sign.  
 FIGURE 29: Combination. (Covey, 1994:26)  
 FIGURE 30: Latin Cross. (Bronswijk, 1987:65)  
 FIGURE 31: Greek Cross. (Bronswijk, 1987:65)  
 FIGURE 32: Tau Cross. (Bronswijk, 1987:65)  
 FIGURE 33: Andreas Cross. (Bronswijk, 1987:65)  
 FIGURE 34: Gaffle Cross. (Bronswijk, 1987:65)  
 FIGURE 35: Cardinal's Cross. (Bronswijk, 1987:65)  
 FIGURE 36: Labarum / Christogram (Koortz, 1974:102)  
 FIGURE 37: Patriarchal Cross. (Bronswijk, 1987:65)  
 FIGURE 38: Agnus Dei. (Bronswijk, 1987:25)  
 FIGURE 39: Alpha and Omega. (Bronswijk, 1987:87)  
 FIGURE 40: Angle. (Bronswijk, 1987:106)  
 FIGURE 41: The Banner. (Bronswijk, 1987:78)  
 FIGURE 42: The Dove. (Bronswijk, 1987:19)  
 FIGURE 43: The Dragon. (Bronswijk, 1987:105)  
 FIGURE 44: The Eagle. (Bronswijk, 1987:17)  
 FIGURE 45: The Five Wounds. (Solomon, 2002:77)  
 FIGURE 46: The old lady. (Covey, 1994:45)  
 FIGURE 47: The Four Evangelists. (Bronswijk, 1987:134)  
 FIGURE 48: Mark the Lion. (Bronswijk, 1987:25)  
 FIGURE 49: The Lily. (Solomon, 2002:81)  
 FIGURE 50: The Trefoil. (Solomon, 2002:89)  
 FIGURE 51: The Triquetra. (Solomon, 2002:91)  
 FIGURE 52: The Fish. (Bronswijk, 1987:32)  
 FIGURE 53: Symbolism of the Trinity in the procession towards the building.  
 FIGURE 54: The Tabernacle (Batchelor, 1993: 26)  
 FIGURE 55: Mount Sinai. (Batchelor, 1993:24)  
 FIGURE 56: A representation of the Tabernacle. (Kiene, 1977: 19)  
 FIGURE 57: The entrance. (Kiene, 1977:33)  
 FIGURE 58: The Hangings of the outer court ( Kiene, 1977:39)  
 FIGURE 59: The Pillar (Kiene, 1977:41)  
 FIGURE 60: The Tent of Meeting. (Kiene, 1977:69)  
 FIGURE 61: The Badgers' skins (Kiene, 1977:73)  
 FIGURE 62: The Red Rams' skins (Kiene, 1977:73)  
 FIGURE 63: The Goats' hair' skins (Kiene, 1977:74)  
 FIGURE 64: The Cherubim covering (Kiene, 1977:74)  
 FIGURE 65: The Cherubim covering close up (Kiene, 1977:81)  
 FIGURE 66: Illustration of the Temple. (NIV 1985:481)  
 FIGURE 67: Illustration of the Temple (Curt, 1991:84)  
 FIGURE 68: Plan of House Church Dura-Europos (Koorts, 1974:18)  
 FIGURE 69: Old St. Peter's Basilica, Rome 333 A (Fleming, 1995:129)  
 FIGURE 70: Plan of Old St. Peter's Basilica (Fleming, 1995:129)  
 FIGURE 71: Sant' Apollinare, Classe 530 AD (Fleming, 1995:155)  
 FIGURE 72: Section view of typical Early Roman Christian Basilica. (Fleming, 1995:129)  
 FIGURE 73: Interior of the apse, Sant' Apollinare, Classe. 530 AD (Fleming, 1995:156)  
 FIGURE 74: San Vitale, Ravenna. 527 - 547 AD (Fleming, 1995: 134)  
 FIGURE 75: Plan of San Vitale, Ravenna. 527 - 547 AD (Fleming, 1995:134)  
 FIGURE 76: Plan of Haga Sophia. Constantinople. 532 - 537 (Sutton. 1999:28)  
 FIGURE 77: Haga Sophia exterior. (Fleming, 1995:138)  
 FIGURE 78: Haga Sophia interior. (Fleming, 1995:138)  
 FIGURE 79: Third Abbey Church of Cluny. 1120 AD (Sutton.1999:51)  
 FIGURE 80: Plan of Third Abbey Church of Cluny. 1120 AD (Fleming, 1995:166)  
 FIGURE 81: Third Abbey Church of Cluny Interior. 1120 AD (Fleming, 1995:168)  
 FIGURE 82: St Sermin, Toulouse. 1080 AD (Fleming, 1995:167)  
 FIGURE 83: Paray-le-Monial, Burgundy. 1100 AD (Sutton. 1999:53)  
 FIGURE 84: S. Spirito, Florence (Sutton. 1999:127)  
 FIGURE 85: S. Spirito, Florence (Fleming 1995:256)  
 FIGURE 86: Plan of Florence Cathedral (Fleming 1995:256)  
 FIGURE 87: Dome of Florence Cathedral (Fleming 1995:256)  
 FIGURE 88: Chartres Cathedral West facade 1145 AD (Fleming 1995: 203)  
 FIGURE 89: Chartres Cathedral from South 1145 AD (Fleming 1995: 201)  
 FIGURE 90: Plan of Chartres Cathedral (Fleming 1995: 203)  
 FIGURE 91: Stained glass window, Chartres Cathedral. (Fleming 1995: 214)  
 FIGURE 92: Plan of Abbey Church of St. Denis 1140 AD. (Fleming 1995: 200)  
 FIGURE 93: Reims Interior 1211 AD.  
 FIGURE 94: Abbey Church of St. Denis 1140 AD. (Fleming 1995: 200)  
 FIGURE 95: Plan of San Carlo, Rome. 1635 (Fleming 1995:381)  
 FIGURE 96: San Carlo, Rome. 1635 (Fleming 1995:381)  
 FIGURE 97: Interior of dome, San Carlo, Rome. 1635 (Fleming 1995:381)  
 FIGURE 98: Il Gesu, Rome 1575. (Fleming 1995:380)  
 FIGURE 99: Vierzehenheiligen interior, Bavaria. 1743-72 (Sutton. 1999:169)  
 FIGURE 100: Interior Gesu. (Fleming 1995:380)  
 FIGURE 101: Plan Vierzehenheiligen. (Sutton. 1999:169)  
 FIGURE 102: Plan Gesu. (Fleming 1995:380)  
 FIGURE 103: Model A. The Sunday Church. (Swanepoel, 2003)  
 FIGURE 104: Model B. (Swanepoel, 2003)  
 FIGURE 105: Model C. (Swanepoel, 2003)  
 FIGURE 106: Traditional to Modern. (Swanepoel, 2003)  
 FIGURE 107: Time Line of Moreleta. (Rabie, 2003b)  
 FIGURE 108: Administration Building. (Steyn, 2003b)  
 FIGURE 109: Exterior of the Church building. (Steyn, 2003b)  
 FIGURE 110: One of the entrances to the Auditorium. (Steyn, 2003b)  
 FIGURE 111: Foyer space to the Auditorium. (Steyn, 2003b)  
 FIGURE 112: Hall. (Steyn, 2003b)  
 FIGURE 113: Cross inside Chapel. (Steyn, 2003b)  
 FIGURES 114-115: Stained glass windows inside Chapel. (Steyn, 2003b)  
 FIGURE 116: Outside parking. (Steyn, 2003b)  
 FIGURE 117: The Chapel. (Steyn, 2003b)  
 FIGURE 118: Stage inside Auditorium. (Steyn, 2003b)  
 FIGURE 119: Sound and lighting studio of Auditorium. (Steyn, 2003b)  
 FIGURE 120: The Auditorium. (Steyn, 2003b)  
 FIGURE 121: Cross Sculpture at the entrance. (Steyn, 2003b)  
 FIGURE 122: Logo of Moreleta. (Rabie, 2003c)  
 FIGURE 123: Trademarks of the Moreleta NG Church. (Rabie, 2003c)  
 FIGURE 124: Map of South Africa. (The Larger Touring Atlas of SA, 2001)  
 FIGURE 125: Map of Pretoria and surrounding area. (The Larger Touring Atlas of SA, 2001)  
 FIGURE 126: Aerial Photograph of the bigger area surrounding the site. (Tswane Council, 2003)  
 FIGURE 127: The Greenfield site. (Tswane Council, 2003)  
 FIGURE 128: Contour Map with Site. (Tswane Council, 2003)  
 FIGURE 129: Contour Map with Site enlarged. (Tswane Council, 2003)  
 FIGURE 130: Contours according to colour, white highest and black lowest.  
 FIGURES 131-133: Photographs of the Site. (Steyn, 2003b)  
 FIGURES 134-136: Photographs of the Site. (Steyn, 2003b)  
 FIGURES 137-139: Photographs of the Site. (Steyn, 2003b)

- FIGURE 140: Zoning Map of the surrounding area (Tswane Metro. 2003)  
 FIGURE 141: Kimiad Golf Club (Steyn. 2003b)  
 FIGURE 142: Wingate Golf Club (Steyn. 2003b)  
 FIGURE 143: Wingate Shopping Center (Steyn. 2003b)  
 FIGURE 144: Pretoria East Hospital (Steyn. 2003b)  
 FIGURE 145: Pretoria Cemetery (Steyn. 2003b)  
 FIGURE 146: Contour map of the area surrounding the site (Tswane Council, 2003)  
 FIGURE 147: Looking to the West (Steyn. 2003b)  
 FIGURE 148: Urban fabric on the western side of the site (Steyn. 2003b)  
 FIGURE 149: Road infrastructure as proposed by Traffic Engineers. (Tswane Council, 2003)  
 FIGURE 150: The distribution of the church members.  
 FIGURE 151: Map of Pretoria with member distribution. (Tswane Council, 2003)  
 FIGURE 152: Exterior of Universiteitsoord NG Church. (Steyn MG:5)  
 FIGURE 153: Construction of Universiteitsoord NG Church. 1965. (Universiteitsoord, 1985:3)  
 FIGURE 154: Interior with pulpit and organ. (Steyn GM:9)  
 FIGURE 155: The main entrance at the back. (Steyn GM:3)  
 FIGURE 156: Center during construction. (Senekal, 1999:18)  
 FIGURE 157: Center after completion. (Senekal, 1999:18)  
 FIGURE 158: Ground floor plan. (Senekal, 1999:20)  
 FIGURE 159: Roof plan. (Senekal, 1999:21)  
 FIGURE 160: Aerial view. (Senekal, 1999:21)  
 FIGURE 161: Chapel interior. (Senekal, 1999:19)  
 FIGURE 162: Auditorium interior. (Senekal, 1999:19)  
 FIGURE 163: Exterior view from Grand Avenue. (Webb, 2002:40)  
 FIGURE 164: Exterior view from the High way. (Webb, 2002:37)  
 FIGURE 165: Exterior view Temple Street. (Webb, 2002:36)  
 FIGURE 166: Giving scale to the building. (Webb, 2002:38)  
 FIGURE 167: Ground floor plan. (Webb, 2002:41)  
 FIGURE 168: Interior view of the organ. (Webb, 2002:35)  
 FIGURE 169: Interior model showing lighting effects. (Webb, 2002:45)  
 FIGURE 170: Inside the Modern Cathedral. (Webb, 2002:48,49)  
 FIGURE 171: Section through the building and tower. (Webb, 2002:45)  
 FIGURE 172: Longitudinal section. (Webb, 2002:44)  
 FIGURE 173: Site plan. (Church of the Light, 1999:40)  
 FIGURE 174: Exterior view. (Church of the Light, 1999:40)  
 FIGURE 175: View from the altar. (Ando, 1989:30)  
 FIGURE 176: Chapel, view towards the altar. (Ando, 1989:31)  
 FIGURE 177: Interior of the gathering space. (Church of the Light, 1999:43)  
 FIGURE 178: View from the gathering space. (Church of the Light, 1999:42)  
 FIGURE 179: Section through the building. Scale about 1/200 (Church of the Light, 1999:40)  
 FIGURE 180: Plan and concept. (Church on the Water. 1991:110)  
 FIGURE 181: Twilight view of Chapel, pond and forest. (Church on the Water. 1991:121)  
 FIGURE 182: Bird's eye view. (Church on the Water. 1991:111)  
 FIGURE 183: Evening view across the pond. (Church on the Water. 1991:113)  
 FIGURE 184: The Pond. (Church on the Water. 1991:117)  
 FIGURE 185: The approach area at night. (Church on the Water. 1991:117)  
 FIGURE 186: An illuminated scene of emotions. (Memorial Bridge, 2002:47)  
 FIGURE 187: An aerial view of the bridge. (Memorial Bridge, 2002:45)  
 FIGURE 188: Lighting used to create mood. (Memorial Bridge, 2002:47)  
 FIGURE 189: Chapel with closed doors. (Chapel on Stage, 2002:78,79)  
 FIGURE 190: Plan and section. (Chapel on Stage, 2002:78,79)  
 FIGURE 191: Interior view. (Chapel on Stage, 2002:78,79)  
 FIGURE 192: Chapel with doors opened. (Chapel on Stage, 2002:78,79)  
 FIGURE 193: The entrance to the crematorium. (Russel, 2000:225)  
 FIGURE 194: The exit to the cemetery. (Russel, 2000:231)  
 FIGURE 195: Inside a Chapel. (Russel, 2000:231)  
 FIGURE 196: A sky-lighted slot runs from the portal through the gathering space. (Russel, 2000:231)  
 FIGURE 197: Dusk reveals the layering. (Russel, 2000:227)  
 FIGURE 198: View of the two Chapels. (Russel, 2000:227)  
 FIGURE 199: Chapel doorway bathed in sunlight. (Russel, 2000:231)  
 FIGURE 200: The exterior view. (Ryan, 2000:44)  
 FIGURE 201: The lightened interior stairways. (Cohn, 2000:220)  
 FIGURE 202: The location plan. (Ryan, 2000:48)  
 FIGURE 203: Basement plan approx scale 1:2 500. (Ryan, 2000:48)  
 FIGURE 204: Interior view. (Cohn, 2000:222)  
 FIGURE 205: Ground floor plan. (Ryan, 2000:48)  
 FIGURE 206: Longitudinal section through concert hall. (Ryan, 2000:48)  
 FIGURE 207: Longitudinal section through congress hall. (Ryan, 2000:49)  
 FIGURE 208: Curved cladding panels create a scalloped effect. (Ryan, 2000:45)  
 FIGURE 209: Inside the Auditorium. (Ryan, 2000:49)  
 FIGURE 210: Plan of the Auditorium. (Young, 1999:36)  
 FIGURE 211: Section of the Auditorium. (Young, 1999:36)  
 FIGURE 212: View from the stage towards the seating. (Young, 1999:36)  
 FIGURE 213: Ground floor and second floor plans. (Davidson, 2001:129)  
 FIGURE 214: Section through the Auditorium. (Davidson, 2001:131)  
 FIGURE 215: Interior view from the stage. (Davidson, 2001:130)  
 FIGURE 216: Interior view towards the stage. (Davidson, 2001:130)  
 FIGURE 217: Diagram of the foyer space and related facilities extending from this space.  
 FIGURE 218: Auditorium seating, with arms and without. (T&A, 1998:188)  
 FIGURE 219: Auditorium lighting bridge using lanterns. (T&A 1998:192)  
 FIGURE 220: Locating theoretical positions of spot lights. (T&A 1998:192)  
 FIGURE 221: Proscenium stage, horizontal sight lines limiting the seating area. (T&A 1998:188)  
 FIGURE 222: False proscenium further limits the acting area. (T&A 1998:188)  
 FIGURE 223: Mathematical method for finding balcony rake. (T&A 1998:188)  
 FIGURE 224: Vertical sight lines with galleries. (T&A 1998:188)  
 FIGURE 225: Sections through balcony fronts. (T&A, 1998:189)  
 FIGURE 226: Section through an escape staircase. (T&A, 1998:192)  
 FIGURE 227: Plan of an escape staircase. (T&A, 1998:192)  
 FIGURE 228: Two acceptable details for escape stairs. (T&A, 1998:192)  
 FIGURE 229: A stage with circulation routes. (T&A, 1998:190)  
 FIGURE 230: Height for storage shelves, limits for maximum reach. (T&A, 1998:171)  
 FIGURE 231: Convenient reach for heavy or frequently used items. (T&A, 1998:171)  
 FIGURE 232: Measurements for adequate circulation. (T&A, 1998:171)  
 FIGURE 233: An example of a kitchen layout. (T&A, 1998:172)  
 FIGURE 234: Aisle widths between book shelves. (T&A, 1998:297)  
 FIGURE 235: Bookshelf height. (T&A, 1998:132)  
 FIGURE 236: Aisle widths in the Chapel.  
 FIGURE 237: Wheat. (Alexander, 1977:97)  
 FIGURE 238: Myrtles. (VD Spuy, 1986:135)  
 FIGURE 239: Almond. (Sheat, 1982:228)  
 FIGURE 240: Papyrus (Alexander, 1977:99)  
 FIGURE 241: The bark of the Incense Tree. (Alexander, 1977:99)  
 FIGURE 242: Coriander. (Alexander 1977:99)  
 FIGURE 243: Rue. (Alexander 1977:99)  
 FIGURE 244: Yellow Chrysanthemum. (Alexander, 1977:99)  
 FIGURE 245: Olive Tree. (Hay & Synge, 1991:1569)  
 FIGURE 246: Flax. (Alexander, 1977:99)  
 FIGURE 247: Pomegranate. (Alexander, 1977:99)  
 FIGURE 248: The Vine. (Alexander, 1977:99)  
 FIGURE 249: The Cedar. (Alexander, 1977:99)  
 FIGURE 250: Date palm. (Alexander, 1977:97)  
 FIGURE 251: Fig. (Alexander, 1977:97)

- TABLE 1: Philosophy of the Arts. (Keizer, 2003)  
 TABLE 2: The Crosses  
 TABLE 3: Symbols  
 TABLE 4: Symbols  
 TABLE 5: Symbols  
 TABLE 6: Symbols  
 TABLE 7: Symbols-numbers  
 TABLE 8: Symbols-numbers  
 TABLE 9: Elements in the Tabernacle.  
 TABLE 10: Elements in the Tabernacle.

- FIGURE 252: Bubble diagram of the different spaces.  
FIGURE 253: Identifying suitable areas on site.  
FIGURE 254: Positioning functions on site.  
FIGURE 255: Illustrating relationships between sizes of facilities.  
FIGURE 256 : Standard Gothic Plan according to the Golden Section. (Ching, 1996:289)  
FIGURE 257 : Proportional analysis of a Clouded Swallowtail. (Doczi, 1981:91)  
FIGURE 258: The Golden Section in rectangles whirling around to form a spiral. (CHING 1996:287)  
FIGURE 259 : Concept design using the Golden Section of golden rectangles.  
FIGURE 260 : Golden rectangles. (CHING, 1996:287)  
FIGURE 261 : Villa Garches designed by Le Corbusier using rectangles. (CHING, 1996:291)  
FIGURE 262 : First concept sketch.  
FIGURE 263 : Second concept sketch.  
FIGURE 264: Plan scale 1:1000  
Figures 265-269: Photographs of Auditorium concept model  
Figure 270: Plan showing overlapping circles.  
Figure 271: Trinity represented by two overlapping circles  
Figure 272: Logo with Dove.  
Figure 273: Plan scale 1:1000  
Figure 274: Aerial view of model - Wall and Chapel  
Figure 275 : Preliminary Section of Chapel, not to scale  
Figure 276: Perspective view on the model, looking North  
Figure 277: Plan of Wall and Chapel scale 1:500  
Figure 278: Plan scale 1:1000  
FIGURES 279-281: Photographs of concept model - Memorial Wall and Chapel  
FIGURE 282: Concept design showing points of importance to position landmark elements.  
FIGURE 283: Plan of Church for year 2000 by Richard Meier. (Meier, 1999: 78)  
FIGURE 284: Computer Model of Church for year 2000. (Meier, 1999: 78)  
FIGURE 285: Concept Model of Auditorium and Foyer  
FIGURE 286: Concept Model of Chapel  
FIGURE 287: Plan of Auditorium, Wall and Chapel.  
FIGURE 288: Concept Layout illustrating circulation.  
FIGURE 289: A - Linear circulation with from a common point. (Ching, 1996:253)  
FIGURE 290: B - Linear circulation with changes in movement at nodes. (Ching, 1996:253)  
FIGURE 291: C - Composite circulation where important points are centers of activities. (Ching, 1996:253)  
FIGURE 292: Minimum Corridor Width for Auditorium and Foyer. (T&A, 1998:30)  
FIGURE 293: Minimum Corridor Width Memorial Wall and Chapel.  
FIGURE 294: Plan showing circulation in and between the buildings.  
FIGURE 295: Bushstone (Grinaker precast,1992)  
FIGURE 296: Bushstone Dimensions. Grinaker precast,1992)  
FIGURE 297: Irregular ceramic tiles. (Mathews, 2003:19)  
FIGURE 298: Pebbles. (Mathews, 2003:19)  
FIGURE 299: Concrete Paving. (The Grinaker Service)  
FIGURE 300 Unidecor Paving1. (The Grinaker Service)  
FIGURE 301: Pebbles and concrete blocks. (Mathews, 2003:67)  
FIGURE 302: Plan showing pedestrian ramps, walkways and stairs.  
FIGURE 303: Concept on movement.  
FIGURE 304: Entrance to Water Temple by Ando. (Ando, 12:160)  
FIGURE 305 : Plan showing how users would enter the Auditorium  
FIGURE 306: Plan showing evacuation of the Auditorium  
FIGURE 307: Section through Water feature and ramp entrance to the Memorial Wall.  
FIGURE 308: Water feature and ramp entrance to the Memorial  
FIGURE 309 : Section through water feature next to the Chapel.  
FIGURE 310: Entrances into the Chapel in combination with the water feature  
FIGURE 311: Benches and trees.  
FIGURE 312: Social Spaces created in and around the buildings.  
FIGURE 313: Plan showing spaces of social interaction  
FIGURE 314: View towards the Catholic Church in Taos, 17th century. (Ching 1996:233)  
FIGURE 315: View when approaching Notre Dame Du Haut. Le Corbusier. (Ching, 1996:230)  
FIGURE 316: View from the garden towards the Cross at the Chapel.  
FIGURE 317: Looking down the ramp into the Memorial Wall  
FIGURE 318: Interior corridor at Sayoh Housing. (Ando, 12:145)  
FIGURE 319: Concept layout showing important places where space should flow between the inside and outside.  
FIGURE 320: Concept model of Chapel showing the indoor / outdoor connections.  
FIGURE 321: Plan of Chapel showing the indoor / outdoor connections.  
FIGURE 322 : A ventilation system for the Auditorium where air is distributed from underneath the seats.  
FIGURE 323: Through Ventilation. Plan. (T&A, 1998: 386)  
FIGURE 324: Through Ventilation. Section.(T&A, 1998: 386)  
FIGURE 325: Acceptable Air Speeds (t&a, 1998:386)  
FIGURE 326: Plan of the auditorium. (Nel, 2002:37)  
FIGURE 327: Section through Auditorium. (Nel, 2002:38)  
FIGURE 328: Detail of the ventilation system in plan. (Nel, 2002:40)  
FIGURE 329: Detail of the ventilation system in section. (Nel, 2002:39)  
FIGURE 330: The rock bed during Construction. (Nel, 2002:41)  
FIGURE 331: Plan. (Reynolds, 2002:38)  
FIGURE 332: View from the top showing air duct. (Reynolds, 2002:38)  
FIGURE 333: View from the bottom. (Reynolds, 2002:38)  
FIGURE 334: Sections. (Reynolds, 2002:38)  
FIGURE 335: concept of passive Cooling for the Church.  
FIGURE 336: Hall on the first floor of I House. Ando. (Ando, 12:46)  
FIGURE 337: Birch Plywood Oiled Chairs by Maarten van Severen. (Architectural Design, 2002:44)  
FIGURE 338: Worm Bench by Michael Ryan. (Architectural Design, 2002:71)  
FIGURE 339: Ablution in the Auditorium  
FIGURE 340: Ablution outside the Chapel  
FIGURE 341: Recommended WC cubicles for The wheelchair user. (T&A, 1998:342)  
FIGURE 342: An alternative solution for the wheelchair user. (T&A, 1998:342)  
FIGURES 343-347: Photographs of structural models. (Steyn, 2003d)  
Figure 348: Detail section through the Chapel roof showing the cantilever timber structure.  
Figure 349: Section through the Chapel.  
FIGURES 350-353: Showing the roof structure of the Chapel.  
FIGURE 354: Section through the Northern side of the Auditorium, a Trombe Wall.

- FIGURE 355: Diagram showing the difference between altitude and azimuth. (Napier, 2000: 4.5.1)
- FIGURE 356: Sun Angles for Pretoria and Johannesburg. (Napier, 2000: 4.10)
- FIGURE 357: Plan of Chapel with the shadow effects
- FIGURE 358: Saving energy when heating water by means of solar heat.
- FIGURE 359: Water efficient devices. A sildi valve and flow regulator.
- FIGURE 360: The Rainwater and Greywater systems.
- FIGURE 361: The Rainwater systems.
- FIGURE 362: Section through a water feature.
- FIGURE 363: Plan of the storage tank and pump room
- FIGURE 364: A representation of the parking orientation. Only part of the parking is shown.
- FIGURE 365: Plan of the garden illustrating the spaces created
- FIGURES 366-369: (Gibberd, 2002)
- FIGURE 370: An interesting wall finish, done by Pieter Mathews. (Mathews, 2003:31)
- FIGURE 371: Irregular ceramic tiles. (Mathews, 2003:19)
- FIGURE 372: Cement slush finish. (Mathews, 2003:62)
- FIGURE 373: Bagged soldier finish. (Mathews, 2003:69)
- FIGURE 374: Beton brut and titanium dioxide plaster. (Mathews, 2003:58)
- FIGURE 375: Copper cladding. (Mathews, 2003:95)
- FIGURE 376: Plaster carving (Mathews, 2003:99)
- FIGURE 377: Tile floor. (Mathews, 2003:29)
- FIGURE 378: Plaster imprint. (Mathews, 2003:72)
- FIGURE 379: Timber and concrete floor. (Mathews, 2003:50)
- FIGURE 380: Daubing finish. (Mathews, 2003:38)
- FIGURE 381: Section through the Chapel .
- FIGURE 382: Plan showing the Wedding route.
- FIGURE 383: Plan of Chapel showing outside gathering area.
- FIGURES 384,385: Photographs of the concept model showing the memorial wall. (Steyn, 2003d)
- FIGURES 386-388: Photographs of second concept model.
- FIGURE 389: Plan of Memorial Wall.
- FIGURE 399: Aerial view of Walls.
- FIGURES 390-391: Memorial Wall at Pretoria East Congregation.
- FIGURE 392: Model of a section of the Wall.
- FIGURE 393: Construction of a Niche.
- FIGURE 394: Section through the Wall. See Appendix drawing page 4 no 4.2
- FIGURE 395: Detail Section through a Niche.
- FIGURE 396: Drawing illustrating the modular concrete blocks.
- FIGURE 397: Golden Spirals used for positioning the Niche openings.
- FIGURE 398: An elevation of the Memorial Wall.
- FIGURE 399: Model of Walls showing concrete blocks with niches.
- FIGURE 400: Eastern view of the Memorial Wall.
- FIGURE 401: Southern view of the Memorial Wall.
- FIGURE 402: Aerial view of the Memorial Wall from a south western angle.
- FIGURE 403: Ramp and walls.
- FIGURE 404: Back of Amphi Theater and wall.
- FIGURES 405-407: Photographs of a portion of the Memorial Wall.
- FIGURE 408: Plan of the Chapel.
- FIGURE 409: Aerial view of the Chapel.
- FIGURE 410: Section through the Chapel.
- FIGURE 411: Chapel as an intimate space.
- FIGURE 412: Aerial view of garden, Walls and Chapel.
- FIGURE 413: Positioning of Walls and Chapel.
- FIGURE 414: The interior is exposed to the exterior.
- FIGURE 415: The front of the Chapel is exposed to direct sunlight.
- FIGURE 416: Contrast of light and dark.
- FIGURE 417: Ramp leading to the main entrance of the Chapel.
- FIGURE 418: Viewing the Chapel roof from the top.
- FIGURE 419: Pockets of light streaming into the Chapel through the small openings in the roof.
- FIGURE 420: Different materials used in the Chapel construction.
- FIGURE 421: Water feature next to the Chapel.
- FIGURE 422: Outside gathering area next to the chapel.

# God is in The House

## Introduction

## Religious Architecture

The human consists of body, mind, soul and spirit. It is the soul and spirit that facilitate religious experience. The nature of religious architecture will further assist in the measure of involvement. There is a certain enchantment and unspoken excitement when one visits certain religious structures. In this document the realm of Christian architecture will be explored

My Diary: Saturday November 30th 2002

'To design a building or structure with direct or indirect **religious** connotations, is almost an impossible task. We, as humans, can only portray and represent in a humanly fashion through human minds, that which we perceive as **supernatural**

and **Godly**. It could almost be seen as an act of arrogance to even remotely try to manifest the glory of the Almighty in an earthly and decaying structure. But yet, this is the beauty of **grace**. We are permitted to represent, though grossly imperfect, our experience and connection to that. which is **beyond our understanding.**'



# A Journey of the Soul

## Introduction

### The Christian Faith

Before anyone can reach an understanding of Christian architecture, one must grasp the Christian Faith. There are many religions on this earth, each with unique selling propositions. Many people see Christianity merely as one of the many faiths. There is however a unique facet, not found in any other religion. Christians believe in eternal life and that the prospect of heaven is a free gift for whoever believes in God. John 3:16 "For God so loved the world that He gave His only Son, that whoever believes in Him shall not perish but have eternal life." (NIV, 1998:1598) So many people wrongly think that one should earn one's way into heaven, by being a good person and doing good deeds to one's neighbour. Yes, these are Christ-like qualities, but will never be good enough to open the doors into heaven. The Word says in Romans 3:23 " . . . for all have sinned and fall short of the glory of God." (NIV, 1998:1710) Thus, no matter how few sins one commit, one will never be good enough to saves one's soul from hell. Ephesians 2:8 "For it is by grace you have been saved, through faith and this not from yourselves, it is the gift of God not by works, so that no one can boast." (NIV, 1998:1793) Jesus becomes the perfect offer for the sins of the world. He led a sinless life and died for each human being that has dwelt or will dwell on this planet. Refer to 'The Story of Jesus' p17. Another misinterpretation is that Christianity is another set of rules to be obeyed in order to keep an angry God happy. In so many other religions, people are motivated to follow the decrees of the religion out of fear. They fear the wrath of their gods when they do not obey. Christianity is not a religion, but a relationship. God longs to have a relationship with His children. He is a loving God full of mercy. Jonah 4: 2 " . . . I knew that You are a gracious and compassionate God, slow to anger and abounding in love, a God who relents from sending calamity." (NIV, 1998:1368) In the Bible we find the Old and New Testaments. The Old Testament comprises the time before the Savior Jesus Christ came to earth, and the New Testament when Jesus came as God in human form. Refer to 'Christianity and the Christian Church' p12. In the Old Testament people brought animal sacrifices at the Tabernacle and the Temple, in order for their sins to be forgiven. In the New Testament Jesus becomes the perfect final sacrifice and people need not bring animal sacrifices any more, hence the change in Christian architecture.

### Christian Architecture

In the Old Testament we have the Tabernacle and Temple as examples of Christian architecture. Both these structures serve as meeting place between God and man. It is only the high priest that can enter the Most holy of Holies. People experienced the presence of God upon entering the premises of these buildings. All elements in these buildings were carefully chosen and crafted. God, himself, gave instructions for the construction of the Tabernacle and Temple. He equipped men and women to do the specific tasks. All the elements, whether in the material or the colour, had symbolic meaning. Refer to the description of the Tabernacle and Temple p48. This was God's House, the place where He interacted with His children. Note that God was not confined to the actual Tabernacle or Temple building, it only served as meeting place. In the New Testament Jesus comes to earth and changes the role of religious structures. The House of God is now found in the hearts of His children. Jesus repairs the broken relationship between man and God. The building serves as gathering space for believers. It is in the gathering of believers that the 'Church' comes together. 2 Corinthians 6:16 " . . . For we are the temple of the living God. As God has said: "I will live with them and walk among them, and I will be their God, and they will be My people." (NIV, 1998:1770) After the ascension of Christ into heaven, the first Churches are established in the form of House-Churches. From here the architecture develops into the Basilicas up to the Baroque Church buildings. Refer to 'Early Christian Architecture' p56 up to 'Baroque Church Architecture' p.



# Introduction

## The House of God

The Bible expounds extensively about the House of God and its character. God chooses to have a dwelling place on earth to meet with His people. But one realizes that God cannot be localized in a man-made temple, magnificent though it may be. Isaiah 66:1,2 "This is what the Lord says: 'Heaven is My throne, and the earth is My footstool. Where is the house you will build for Me? Where will My resting place be? Has not My hand made all these things, and so they came into being?' declares the Lord." (NIV, 1998:11,12)

God wants His house to have specific qualities.

- God wants it to be a refuge. Psalm 84:10,11 "Better is one day in Your courts than a thousand elsewhere, I would rather be a doorkeeper in the house of my God than dwell in the tents of the wicked. For the Lord God is a sun and shield. The Lord bestows favor and honor; no good thing does He withhold from those whose walk is blameless." (NIV, 1998:876)
- It should be a house of prayer. Isaiah 56:7 " . . . I will bring them to My holy mountain and give them joy in My house of prayer. Their burnt offerings and sacrifices will be accepted for My house will be called a house of prayer for all nations" (NIV, 1998:1099)
- It is a joyous activity. Psalm 42:4 " . . . I used to go with the multitude, leading the procession to the house of God, with shouts of joy and thanksgiving among the festive throng." (NIV, 1998:828)
- God wants His children to experience abundance. Psalm 36:7,8 "How priceless is Your unfailing love! Both high and low among men find refuge in the shadow of Your wings. They feast on the abundance of Your house; You give them drink from Your river of delights." (NIV, 1998:821)
- God's House must be magnificent. 1 Chronicles 22:5" . . . the house to be built for the Lord should be of great magnificence and fame and splendor in the sight of all the nations." (NIV, 1998:613)
- God's children should find strength and flourish. Psalm 92:12,13 "The righteous will flourish like a palm tree, they will grow like a cedar of Lebanon; planted in the house of the Lord, they will flourish in the courts of our God." (NIV, 1998:885)

It took 46 years to build the temple. 1 Chronicles 28:20 "David also said to Solomon his son, "Be strong and courageous, and do the work. Do not be afraid or discouraged, for the Lord God, my God, is with you. He will not fail or forsake you until all the work for the service of the temple of the Lord is finished." (NIV, 1998:622)

God wants His children to experience something of His almighty power and wonderful love when they come together in His house. The Church today must serve the same purpose. Today the building itself is not as important as the individuals visiting. The people become the temple and therefore the mandate to live holy lives. But this is no reason to neglect the appearance and nuance of Christian architecture.

Joy  
Strength  
Refuge  
Magnificent  
Abundance  
Prayer



## Reality v Christianity: the Church today

The Church in South Africa has undergone various forms of change over the past few decades. The building shape has transformed from the traditional to the modern shape. Refer to 'The Church today' p70. The challenge is to maintain the religious character while implementing modern technology and using modern materials.

But how real is the Christian Faith? Is it not true that congregations are dying and churches are becoming empty? Reality is that some churches are bursting with all the new members arriving each year. There is a desperate hunger for the truth and for a relationship with God. Churches are filled to the brim and sometimes people have to turn away because there is no space for them. There is an extraordinary revival and Mega Churches are born, growing each year. Moreleta Dutch Reformed Church is an admirable example of when God blesses a congregation to grow and grow. This congregation is then also the client for this thesis study. Their number of members has reached the 15 000 mark with an annual addition of a 1000 people. For a detailed discussion on the Client please refer to 'Client Profile' p72.

In this document, various aspects concerning Christian Church Design are touched. A Church is not an ordinary building! Therefore a thorough understanding of the amazing richness of this topic is essential. This requires a study of some of the most important aspects of the Christian faith. The author has included the most important aspects that will aid in proper understanding in order to guide the design. One can however, continue forever in researching the broad field of Christianity. Thus, the object of the research is to introduce thoughts on the Christian faith and Church design and then finally produce a design.



# Christianity

The Fountainhead and source of Christianity and the Christian Church is the Bible, also known as Scripture. The Bible consists of two parts, the Old Testament and the New Testament, altogether 66 (sixty six) books, having been written in every known form of literature, bound together to form one book.

Approximately 40 (forty) different writers are included to form the Bible, and their work covers a period of 1 500 (one thousand five hundred) years. Yet the whole comprises a unity of theme and purpose that can be accounted for only on the basis that "prophesy never had its origin in the will of man, the men spoke from God as they were moved by the Holy Spirit." 2 Peter 1:21 (NIV, 1985: 1900) We cannot understand Christianity and the Christian Church without the Bible.

The following points will be discussed briefly:

1. The background to Christianity and the Church is found in the Old Testament.
2. The Beginning and development of Christianity and the church is given in the New Testament.
3. The beliefs and message of the church come from both Old and New Testaments.

The background to Christianity and the Church is found in the Old Testament.

The Old Testament records how God prepared the way for the eventual coming of Jesus Christ. There is history in the Old Testament, human history. But it is history plus God, the history of the affairs of men and God's dealings with these men.

In all of this, God is central. The first book in the Old Testament is Genesis, the book of beginnings. The opening words are: "In the beginning God. . .". Scripture never tries to prove the existence of God. This is significant! The very idea of proof is considered ridiculous to the writers represented in the Bible. God is. God is not for proof but proclamation.

12

In Genesis we find the beginnings of foundational truths:

1. The beginning of creation (Genesis 1:1, 26, 27.)

God created the world we know and live in, all living creatures and the crown of his creation, man and woman. The apostle Paul confirmed this when standing in the midst of Areopagus in Athens, he said: "Men of Athens! I see that in every way you are very religious. For as I walked around and looked carefully at your objects of worship, I even found an altar with this inscription: TO AN UNKNOWN GOD. Now what you worship as something unknown I am about to proclaim to you. The God who made the world and everything in it is the Lord of heaven and earth and does not live in temples built by hands. And he is not served by human hands, as if he needed anything, because he himself gives all men life and breath and everything else. . . Therefore since we are God's offspring, we should not think that the divine being is like gold or silver or stone an image made by man's design and skill. In the past God overlooked such ignorance, but now he commands all people everywhere to repent. For he has set a day where he will judge the world with justice by the man he has appointed. He has given them proof of this to all men by raising him from the dead." Acts 17: 22-31 (NIV, 1985: 1680)



## 2. The beginning of sin. (Gen 3:6-13)

God planted a garden in Eden, where His newly created human beings might live. Adam was made caretaker of this garden and allowed to eat from every tree except the tree of the knowledge of good and evil. This was the only restriction, and any disobedience was to be followed by death. Adam disobeyed and immediately knew he had sinned. He tried to hide from God. Throughout history we see this pattern over and over again.

Paul's words are true: "There is no one righteous, not even one, for all have sinned and fall short of the glory of God." Romans 3:10,23 (NIV, 1985: 1710)

## 3. The beginning of redemption.

God did not wait till Adam found his way back to His side. God Himself hastened in search of him: 'But the Lord God called to the man: "Where are you?"' (Gen 3:9. (NIV, 1985: 10) Only God could undo what Adam and Eve had done with all the consequences. The message in chapter 3:15 is clear. God promised a redeemer, a savior. He told the serpent-tempter: "And I will put enmity between you and the woman. And between your offspring and hers; he will crush your head, and you will strike his heel." (NIV, 1985: 11) This was a prophecy referring to the death of Christ. In Galatians 4:4 we find a statement that this was fulfilled: 'But when the time had fully come, God sent His Son, born of a woman, born under law, to redeem those under law, that we might receive the full rights of sons.' (NIV, 1985: 1785) And also in Hebrews 2:14: '...by his death he might destroy him who holds the power of death - that is, the devil.' (NIV, 1985: 1861)

God's plan to redeem man was put into action. This was not all at once. Mankind had to be taught and prepared for what God desired to do. They were required to be obedient and trustworthy, to have faith in God and in what He revealed to them. The unfolding of this plan is contained in the rest of the Old Testament, and takes a step further in the New Testament.

In the Old Testament some highlights in this plan are given, showing how God educates and prepares the people.

1. The call of Abram, whose name was later changed to Abraham. This was the founder of the Hebrew nation, a devout man, a man of faith in God. By divine command he left his country and went to a new country where God wished him to settle. This was the first of a series of marvelous appearances of God to man, leading at last to the appearance of Jesus Christ in the Incarnation. God made a promise, in the form of a covenant, that Abraham's descendants would be as numerous as the stars. Abraham "believed in the Lord". To ratify this covenant, he was ordered to make a sacrifice to God. This indicated atonement to God. Later, the institution of circumcision was given by God as a seal of the covenant.

## 2. The Law and Tabernacle.

The closing verses of Genesis reveal that the Hebrews (descendants of Abraham) were living in favour in Egypt. In the following book, Exodus, this had changed. Their numbers and wealth had increased. Under a new ruler they were oppressed. They cried to God who heard them and prepared Moses as their deliverer. Moses led them out of Egypt. At Mount Sinai, God reaffirmed His promises to the Hebrews, and commanded the people to prepare for receiving the Law, with ceremonies of purification. The Law was a moral and spiritual code of ten commandments written on two tablets of stone. Jesus summarized the Law thus: "Thou shalt love the Lord your God with all thy heart, and with all thy soul, and with all thy mind. This is the first and great commandment.



# Christianity

And the second is like unto it, thou shalt love thy neighbour as thyself. On these two commandments hang all the law and the prophets. (Matthew 22:37-40) Paul, in the New Testament reminds us "the Law was our schoolmaster to bring us unto Christ." (Galatians 3:24)

After the giving of the Law, God spoke through a cloud and commanded Moses to have a sanctuary or tabernacle constructed God gave him the pattern for this structure. The Temple was later built along the same lines.

The Tabernacle was an oblong tent. Only the High Priest might enter the holy of holies once a year. Nothing ordinary or profane was to be allowed to desecrate God's holy sanctuary. The priest performed a sacrificial rite at the altar just inside the gate. He then washed at a copper laver before entering the tabernacle proper.

The only furniture within the "holy of holies" was the ark of the covenant, a chest containing the two tablets of the Law. The Ten Commandments are a loving covenant of God with His people, and not arbitrary commanding of God to His subjects. On one hand a statement of promises, on the other responsibilities. God agrees to be their God giving His fatherly care and love and forgiveness and protection, while they on their part, agree to keep His Law and serve Him alone. If they disobey they forfeit these blessings as described in Deuteronomy chapters 28-30. It was necessary for these commandments to be definitely expressed, because it would have taken ages for man to discover them by himself, moreover, they needed divine authority behind them to make them more effective.

In the New Testament, the author of the book, Hebrews, devotes three chapters (8-10) to the Tabernacle and its worship, pointing out striking types of the life and ministry of Jesus Christ therein.

### 3. The Temple

David, the king of Israel, had planned and prepared to build a temple, to replace the tabernacle containing the Ark of the Covenant. His son, Solomon, built the temple. The temple was built at Mount Moriah at Jerusalem. At present the Mosque of Omar occupies this site.

The building was a gigantic work of construction. In all essential points the Temple followed the model of the tabernacle. The materials used included a lavish use of gold, brass, iron, precious stones, marble, cedar and other wood, fine linens, skins and stone.

In 1 Kings 6:7 it is stated: 'In building the temple, only blocks dressed at the quarry were used, and no hammer, chisel or any other iron tool was heard at the temple site while it was being built.' (NIV, 1985: 480)

King Solomon dedicated the Temple to God in prayer. The temple was the approach of a nation to their God. It was the symbol of God's presence among the people. It expressed by means of worship, and every available form of ceremony and symbolism, the presence and power and glory of God. It was the visible means of access to God. Yet, amid all the symbolism, God Himself was not adored in any material form. The Temple bound the nation together, it was the religious center and capital.

Approximately 400 years later the temple was rebuilt, this temple was not comparable to the structure that Solomon had built. Later still, under Herod, the Temple was again rebuilt in modified form.

The Temple held a religious teaching for the people. It taught the presence of God, the necessity of sacrifice for sin, the need for forgiveness and God's willingness to forgive, in the holy of holies the very presence of God, their hope and strength.



It is important to note that between the 'holy place' and the 'holy of holies', hung the great veil. This veil symbolized the limited access to the divine presence afforded by Judaism. The veil is referred to in Mark 15:38. At the death of Jesus on the cross 'the veil (curtain) of the temple was torn in two from top to bottom.' (NIV, 1985: 1529) This was an act of God. God was no longer alienated. Jesus Christ now opened the way of approach to God for all men. Hebrew 10:16-23 ' "This is the covenant I will make with them after that time, says the Lord. I will put my laws in their hearts, and I will write them on their minds." Then he adds: " Their sins and lawless acts I will remember no more." And where these have been forgiven there will be no more sacrifice for sin. Therefore, brothers, since we have confidence to enter the Most Holy Place by the blood of Jesus, by a new and living way opened for us through the curtain, that is, His body, and since we have a great priest over the house of God, let us draw near to God with a sincere heart in full assurance of faith, having our hearts sprinkled to cleanse us from a guilty conscience and having our bodies washed with pure water.' (NIV. 1985: 1871)

The rest of the Old Testament is a story of religious apostasy and its dire consequences, of prophets who faithfully championed the cause of God and who pointed forward to the coming of the Messiah.

The Beginning and development of Christianity and the church is given in the New Testament.

The first generation of Christians had no New Testament to read. They wrote it!

For us, it is from the New Testament that we learn about the church that Christ established. From it we learn all about the Gospel, the good news of salvation.

The New Testament contains the following:

1. The Four Gospels that record the genealogy, birth, life, teachings, miracles, death and resurrection of Jesus Christ. In his Gospel, John states: " These are written that you may believe that Jesus is the Christ, the Son of God, and that by believing you may have life in His name." John 20:31 (NIV, 1985: 1637)
2. The book of the Acts of the Apostles is the story of the spread of the Christian gospel during the first generation of Christians.
3. The Epistles are various letters, some of which are personal, others attend to problems, the meaning of redemption doctrinally and practical is explained, and the teachings of Jesus are elaborated and expounded.
4. In the book of Revelation we have the unveiling of Jesus Christ.

Central to everything written in the New Testament is Jesus Christ. He is the fulfillment of the promises and prophecies made in the Old Testament. He was fully God and fully Man, therefore he was able to die for us in order to redeem us, to save us from our sins, their guilt and power.

1 Timothy 1:15 "Here is a trustworthy saying that deserves full acceptance: Christ Jesus came into the world to save sinners of whom I am the worst." (NIV, 1985: 1835) 1 Timothy 2:5 "For there is one God and one mediator between God and men, the man Jesus Christ, who gave himself as a ransom for all men. . . ." (NIV, 1985: 1836) John 3:17 " For God did not send His Son into the world to condemn the world, but to save the world through Him." (NIV, 1985: 1598)



The Apostle Paul said to the elders of the church at Ephesus: "Take heed therefore unto yourselves, and to all the flock, over which the Holy Spirit hath made you overseers, to feed the church of God, which he hath purchased with his own blood." This, of course, referring to the sacrifice of Jesus on the cross.

### The Beliefs of the Church come from both Old and New Testaments

The Old and New Testaments unite to explain the beliefs and message of the Christian Church. The message is one and the same. God progressively revealed Himself, His plans for mankind and eternal truths. These truths never changed. They culminated in the coming of the Lord Jesus Christ. These truths are contained in the Bible. Consider Christ's rebuke of the two on the road to Emmaus for not knowing and understanding the scriptures. "How foolish you are, and slow of heart to believe all that the prophets have spoken!" Luke 24:25 (NIV, 1985: 1589)

We will now look at some important Old Testament truths.

1. The belief in God. A central truth. He is Creator (Isaiah 42:5). He is a personal, living God, self-revealing and self-existing. The great 'I am'. God is holy, the most wonderful aspect of His nature. This stands for supreme moral excellence. Total separation from all defilement and sin. Because He is holy, He cannot be pleased with unrighteousness and rebellion in men. The entire book of Leviticus is a great object lesson teaching the holiness of God and the necessity for an atonement to satisfy the requirements of God's holiness. And also, God is Sovereign over all.
2. Moral responsibility. Every person has freedom of choice.
3. Man is sinful by nature. Psalm 14:1-3
4. A promise of redemption. Christ's coming is anticipated. Daniel 9:25 points to the coming deliverer.

And now. Some New Testament Truths

1. The Old Testament is accepted as the Word of God.
2. God reveals Himself in three Persons: Father, Son and Holy Spirit, the Holy Triune God.
3. Jesus Christ, the Son of God laid aside His glory and came to this world as the God-Man.
4. He died on the cross and gave His life to make atonement for our sins. He died as our substitute, so that if we accept Him we are justified before God.
5. Man is a guilty sinner and needs Jesus Christ as his Savior because he is condemned and powerless to help himself.
6. The way out is through Christ by the free gift of God. How obtained? Repent of your sin. Confess your sin to God. Place your trust in Jesus as your substitute and savior. He died in your place on the cross. Accept this in prayer and faith. After His death, He was resurrected. He now lives. He will care for you and keep you. Trust Him.
7. To grow in the knowledge of God as His child witness to others. Read the Bible regularly and prayerfully. Pray often. Meet with others in the church. Obey God.

There are other truths as well, and many facets of the calling of the Christian in our world. (Steyn. 2003a)



# The story of Jesus

John 1:1 In the beginning was the Word, and the Word was with God, and the Word was God. (NIV,1993:1176)

John 1:3-4 Everything was created through him; nothing not one thing!- came into being without him. What came into existence was Life, and the Life was light to live by. The Life- light blazed out of the darkness; the darkness couldn't put it out. (The Message,1996:218)

# The Story of Jesus

17

FIGURE 1: The Beginning. (Steyn, 2000)

# The story of Jesus

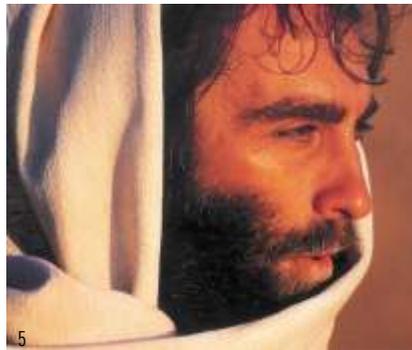


John 1:14 The Word became flesh and made his dwelling among us. We have seen his glory, the glory of the One and Only, who came from the Father full of grace and truth. (NIV,1993:1176)

Matthew 1:20-21 "Joseph son of David, do not be afraid to take Mary home as your wife, because what is conceived in her is from the Holy Spirit. She will give birth to a son, and you are to give him the name Jesus, because he will save his people from their sins. (NIV,1993:1070)



After Jesus was baptized, He was led by the Spirit into the desert to be tempted by the devil. Jesus was the conqueror.



Matthew 4:17 From that time on Jesus began to preach, "Repent, for the kingdom of heaven is near."



Jesus chose twelve disciples to follow Him. He taught them for three years. Matthew 6:6 "But when you pray, go into your room, close the door and pray to your Father, who is unseen. Then your Father, who sees what is done in secret, will reward you." (NIV,1993:1075)

# JESUS



FIGURE : 7 (Marchiano, 2000)

7

Matthew 7:11 "If you then, though you are evil, know how to give good gifts to your children, how much more will your Father in heaven give good gifts to those who ask him!" (NIV,1993:1076)

# Christ

# The story of Jesus



Matthew 9:2 Some men brought to him a paralytic, lying on a mat. When Jesus saw their faith, he said to the paralytic, "Take heart, son; your sins are forgiven." "Get up, take your mat and go home." (NIV,1993:1078)



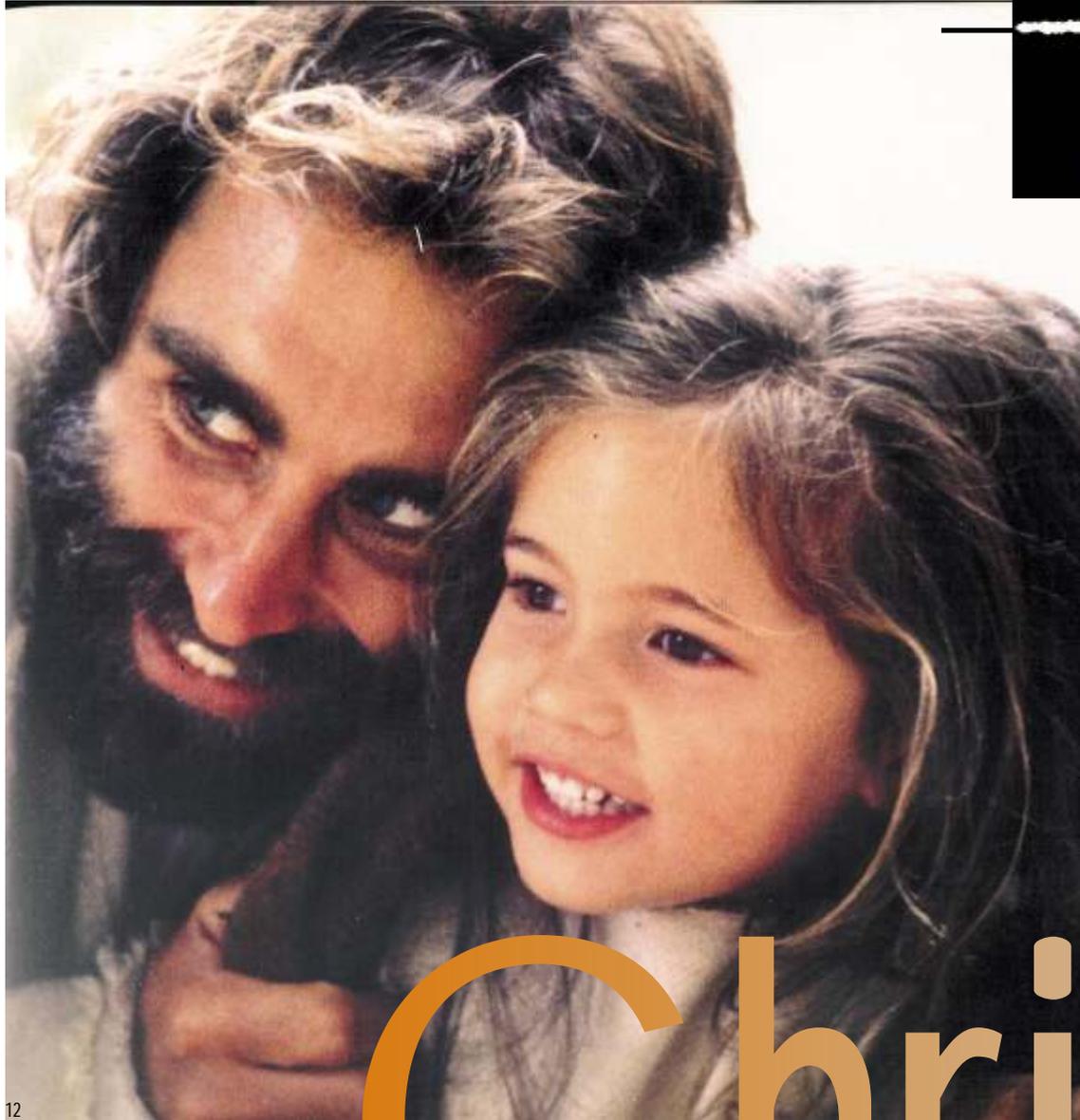
Matthew 9:8 When the crowd saw this, they were filled with awe; and they praised God, who had given such authority to men. (NIV,1993:1078)

# Jesus



# The story of Jesus

Matthew 19:14 Jesus said, "Let the little children come to me, and do not hinder them, for the kingdom of heaven belongs to such as these." (NIV,1993:1092)



12

FIGURE :12 (Marchiano, 2000)

# Christ

# The story of Jesus



13

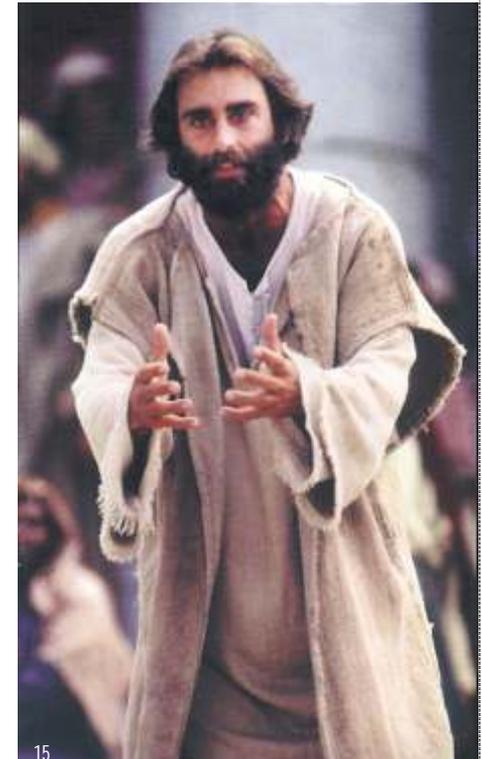
Jesus performed many miracles throughout Israel. He raised the dead and healed the sick.



14

In Zechariah 9:9 it was prophesied that Jesus will have a triumphal entry on a donkey into Jerusalem. Matthew 21:7-9 They brought the donkey and the colt, placed their cloaks on them and Jesus sat on them. A very large crowd spread their cloaks on the road, while others cut branches from the trees and spread them on the road. The crowds that went ahead of him and those that followed shouted, "Hosanna to the Son of David!" "Blessed is he who comes in the name of the Lord!" (NIV,1993:1094 1095)

Matthew 22: 37 40 Jesus replied: " 'Love the Lord your God with all your heart and all your soul and with all your mind. 'This is the first and greatest commandment. And the second is like it: 'Love your neighbor as yourself.' All the Law and the Prophets hang on these two commandments." (NIV,1993:1097)



15

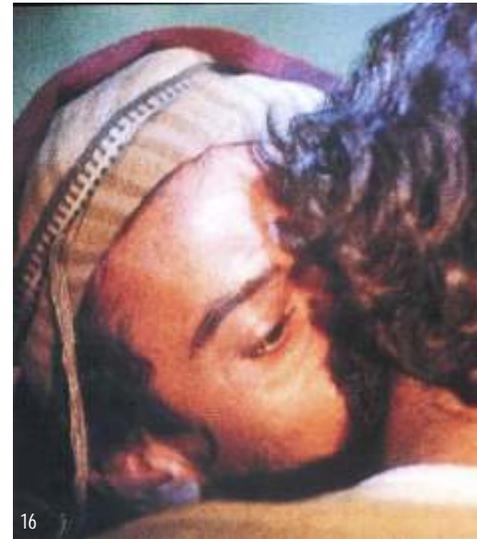
JESUS

# The story of Jesus

The betrayal of Judas was prophesied in Zechariah 11:12, "So they paid me thirty pieces of silver." (NIV,1993:1059)

Mark14:10 Then Judas Iscariot, one of the Twelve, went to the chief priests to betray Jesus to them. They were delighted to hear this and promised to give him money. So he watched for an opportunity to hand him over. (NIV,1993:1128)

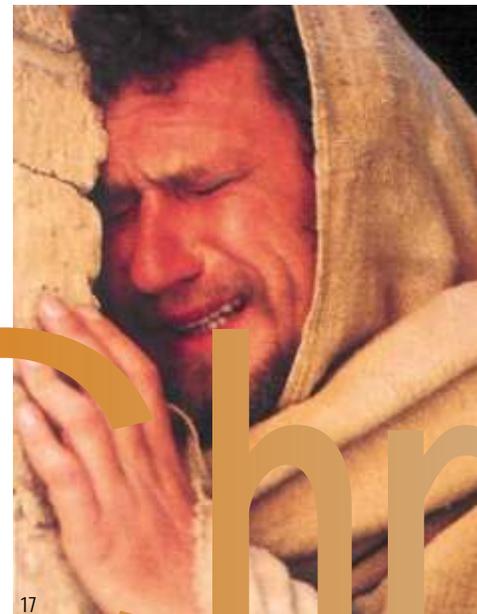
Mark14:44 Now the betrayer had arranged a signal with them: "The one I kiss is the man; arrest him and lead him away under guard." (NIV,1993:1129)



One of the disciples, Peter, denied Jesus.

Matthew 26:33-34 Peter replied, "Even if all fall away on account of you, I never will." "I tell you the truth," Jesus answered, "this very night, before the rooster crows, you will disown me three times." (NIV,1993:1103)

Matthew 26:74-75 Then he began to call down curses on himself and he swore to them, "I don't know the man!" Immediately a rooster crowed. Then Peter remembered the word Jesus had spoken: "Before the rooster crows, you will disown me three times." And he went outside and went away. (NIV,1993:1105)



# Christ

# The story of Jesus



18

Matthew 27:22  
"What shall I do, then with Jesus who is called Christ?" Pilate asked. They all answered, "Crucify him!" (NIV,1993:1106)

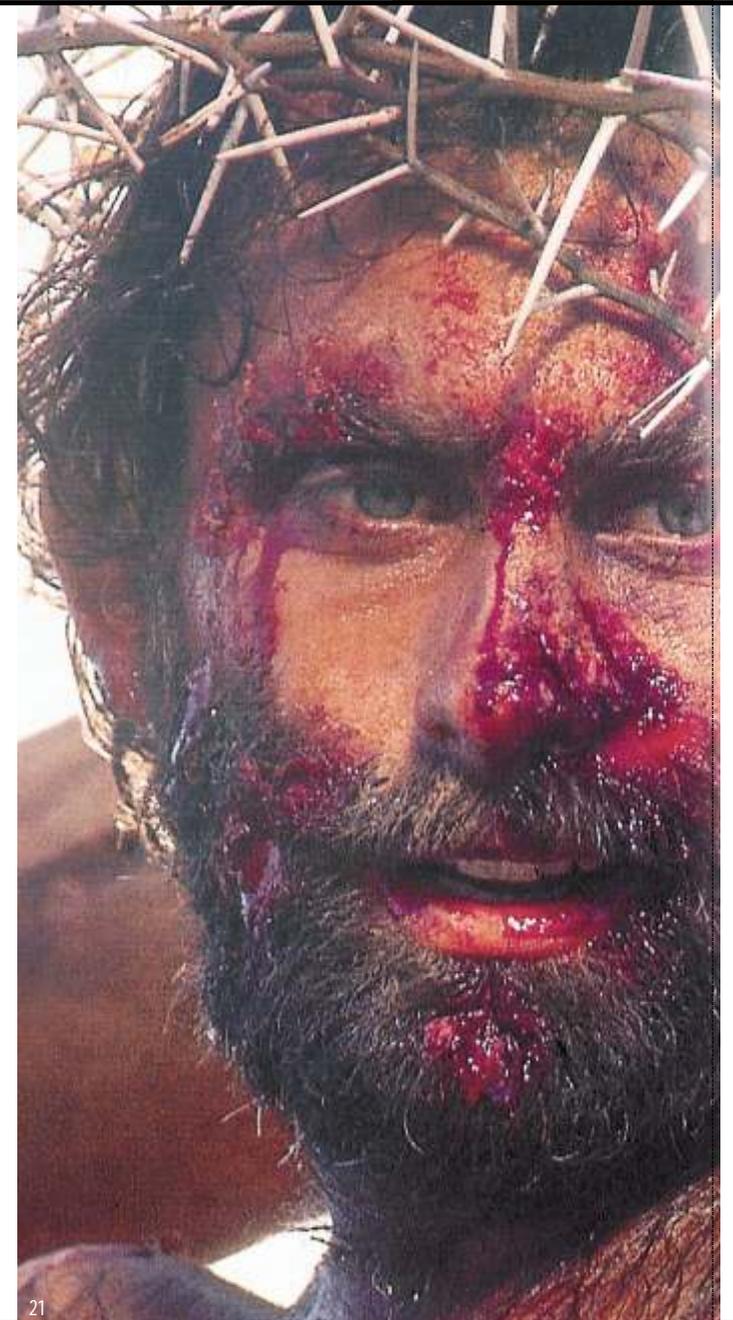


19

Matthew 27:31 Then the governor's soldiers took Jesus into the Praetorium and gathered the whole company of soldiers around him. They stripped him and put a scarlet robe on him, and then twisted together a crown of thorns and set it on his head. They put a staff in his right hand and knelt in front of him and mocked him. "Hail king of the Jews!" they said. They spit on him, and took the staff and struck him on the head again and again. After they mocked him, they took off the robe and put his own clothes on him. Then they led him away to crucify him. (NIV,1993:1106)



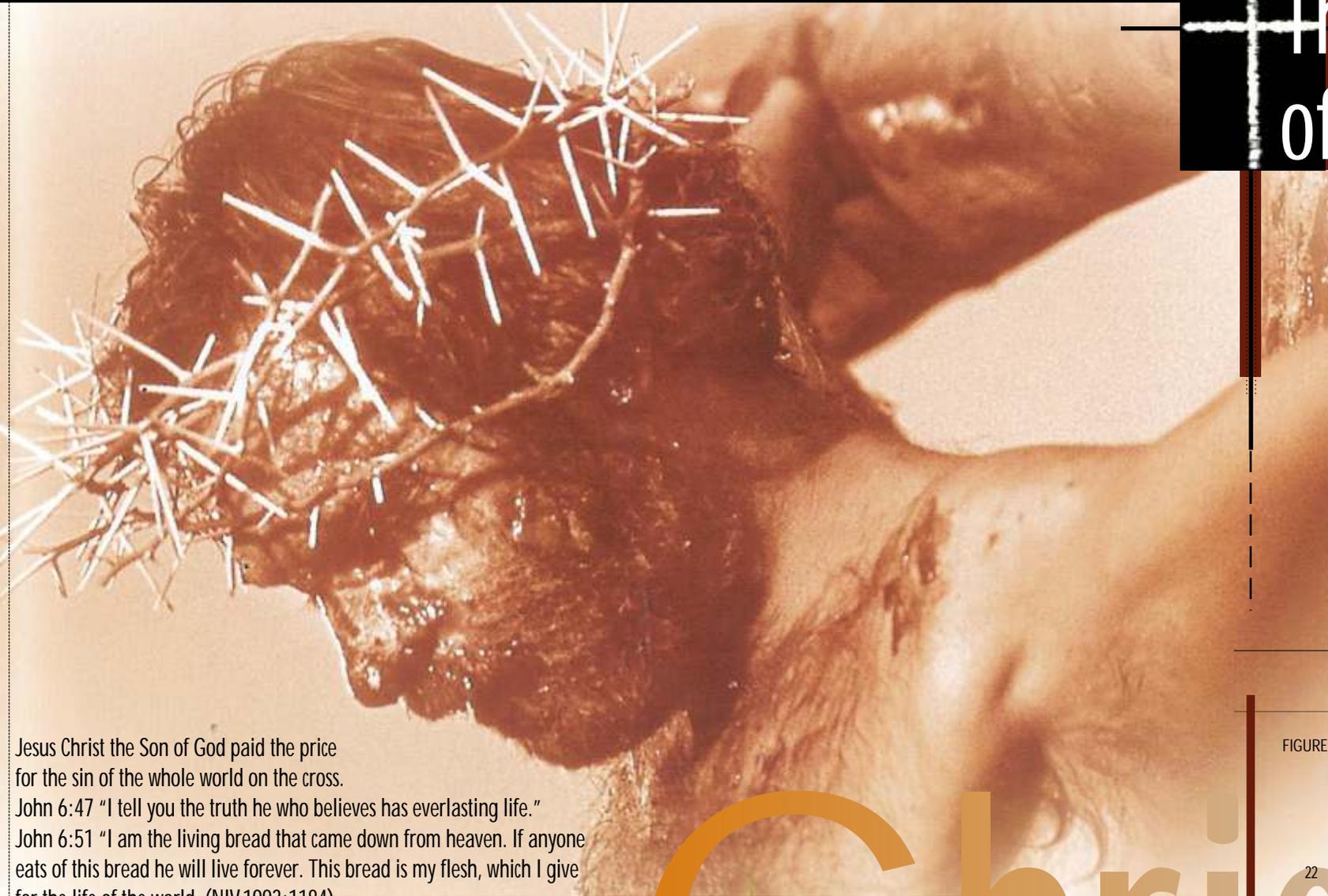
20



21

# Jesus

# The story of Jesus



Jesus Christ the Son of God paid the price for the sin of the whole world on the cross.

John 6:47 "I tell you the truth he who believes has everlasting life."

John 6:51 "I am the living bread that came down from heaven. If anyone eats of this bread he will live forever. This bread is my flesh, which I give for the life of the world. (NIV,1993:1184)

John 3:16 For God so loved the world that he gave his one and only Son, that whoever believes in him shall not perish but have eternal life. (NIV,1993:1179)

FIGURE : 22 (Marchiano, 2000)

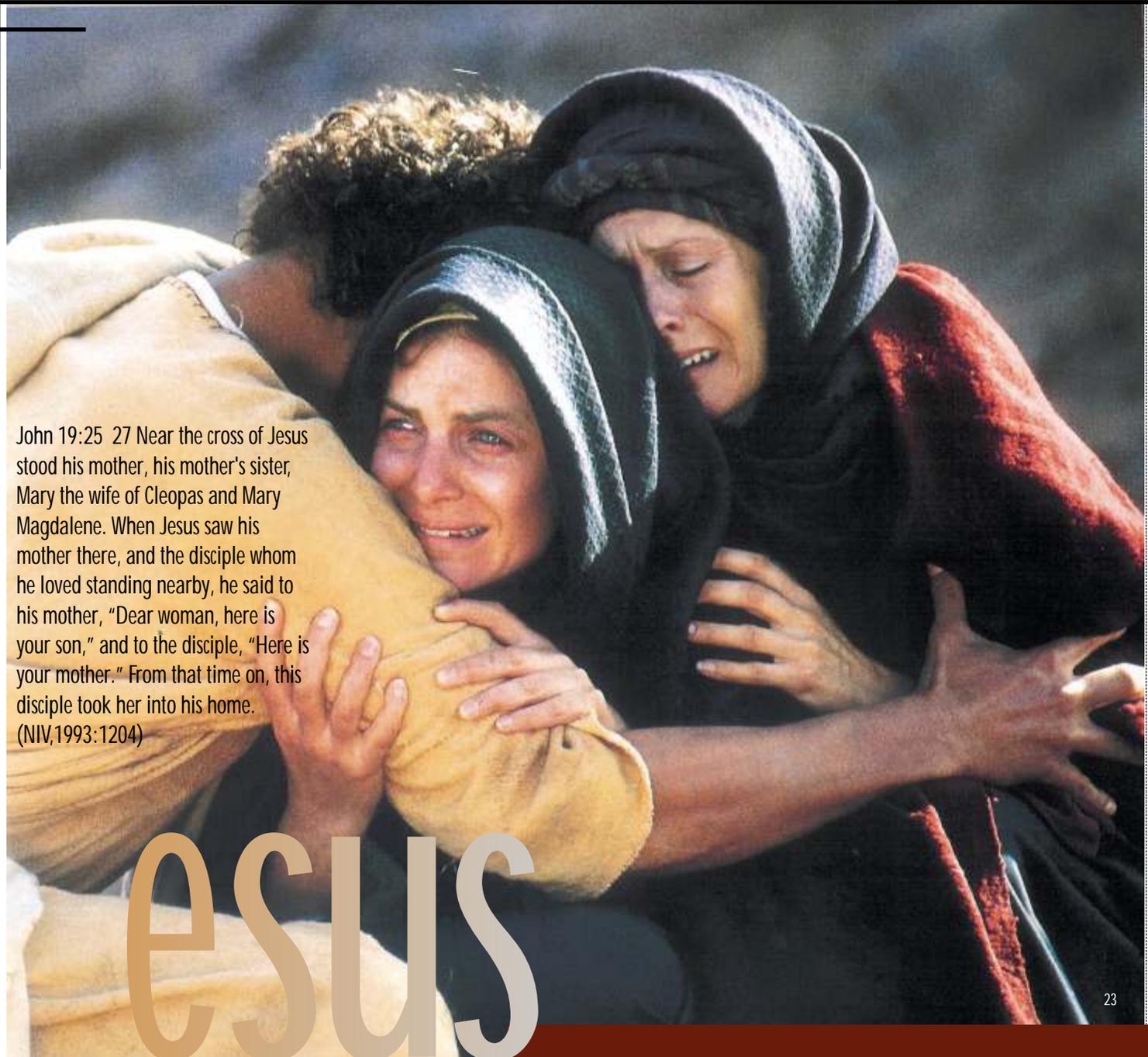
# Christ

# The story of Jesus

John 19:25-27 Near the cross of Jesus stood his mother, his mother's sister, Mary the wife of Cleopas and Mary Magdalene. When Jesus saw his mother there, and the disciple whom he loved standing nearby, he said to his mother, "Dear woman, here is your son," and to the disciple, "Here is your mother." From that time on, this disciple took her into his home. (NIV, 1993:1204)

26

FIGURE : 22 (Marchiano, 2000)



# Jesus

# The story of Jesus



24

Jesus conquered death and was resurrected on the third day. Jesus appeared to Mary Magdalene outside the tomb.

Jesus also appeared to his disciples.  
John 20:27 - 29 Then he said to Thomas, "Put your finger here; see my hands. Reach out your hand and put it into my side. Stop doubting and believe."  
Thomas said to him, "My Lord and my God!"  
Then Jesus told him, "Because you have seen me, you have believed; blessed are those who have not seen and yet have believed."

25

Mark 16:19 After the Lord Jesus had spoken to his disciples, he was taken up into heaven and he sat at the right hand of God. Then the disciples went out and preached everywhere, and the Lord worked with them and confirmed his words by the signs that accompanied it. (NIV,1993:1133)

Acts 1:10, 'They were looking intently up into the sky as He was going, when suddenly two men dressed in white stood beside them. "Men of Galilee", they said, "Why do you stand here looking into the sky? This same Jesus, who has been taken from you i heaven, will come back in the same way you have seen Him go into heaven." (NIV, 1993:644)

27

FIGURES : 24,25 (Marchiano, 2000)

# Christ

# The story of Jesus

GOD IS IN THE HOUSE

28

Revelation 21: 6, 'He said to me: "It is done. I am the Alpha  
and The Omega, the Beginning and the End."' (NIV,  
1985:1949)

# Art and the Church

When the Living God called Moses up the Holy Mountain for 40 days and 40 nights, it involved a discussion on the Arts. (Exodus 25:31) In Exodus 24:12 we read: 'The Lord said to Moses, "Come up to Me on the mountain and stay here, and I will give you the tablets of stone, with the law and commandments I have written for their instruction."' (NIV, 1985:122) It was necessary now that Moses should receive full directions for the external worship of God, the sanctuary, and the priesthood. Every religion has something tangible and material about it: holy places, holy things, rites, ceremonies, rules, forms and regulations. Thus God showed patterns to Moses of all that was to be made for the worship. (Wells, 1994, in Steyn, 2003c)

God is the greatest Creator and Artist imaginable. It is sometimes hard to envision where God fits into the universe. In your mind's eye see the following image and then you will understand: take a glass filled with clear water and place a coloured tissue into the glass. The tissue absorbs the water and can from now on not exist without the water. The moment the tissue is removed from the water it will tear and disintegrate. The universe is like this tissue engulfed in God. God does not exist in the universe but the universe exists within Him. The universe cannot contain God, it is His own creation, God contains the universe. (ds Nicol 2003) What is the role of Art in God's House? Architecture is a form of art . . .

God created and maintains patterns and consistency in the universe. This makes science and technology possible. The form and materials of His creation also make art and beauty possible. Human creativity thus echoes God's own creativity. That is why art has a place in society and also a role in changing a corrupt society. (Packer & Howard 1985, in Steyn, 2003c)

The Greek word for art is *ARTUä*, which means to create order. This is more often than not the case with art. Artists tend to be different from other people and not necessarily ordered. But in the history of art, and in South Africa, it is artists who frequently lead the way. An example of this is the Protest Art and Theater against Apartheid in South Africa. These artists expressed those emotions that others could relate to; it brought a form of order to the oppressed. God's plan is to create order. In Genesis 1 we already see this: "In the beginning God created the heavens and the earth. Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters. And God said: "Let there be light", and there was light. God saw that the light was good, and he separated the light from the darkness. . . ."

Before the 16<sup>th</sup> century Art formed a crucial means of communication in the Church. Artists worked for the Church. Then in the 16<sup>th</sup> century a division between Art and the Church occurred. Artists became famous and wanted to go their own way. This had far reaching effects still influencing thoughts today. The Church has become very apprehensive towards any form of art because of this. This is not God's plan for the Arts. The Church should change its paradigm. (Keizer 2003)

However, we need to state clearly what is meant by Art. This brings us to the philosophical background to art. Ernst Cassirer, professor of philosophy at the Graduate School of Yale University, has written a chapter on "Art", in his book "An Essay on Man". The following is a gist of some of the more relevant points he makes.

The character and nature of beauty do not need complicated metaphysical theories for their explanation. Beauty is part of human experience; it is evident and unmistakable. Nevertheless, it does give rise to different thoughts and theories. Before Kant, all systems of thought had looked for a principle of art within the sphere either of theoretical knowledge or of the moral life. It was conceived as an allegory, a figurative expression, which under its sensuous form concealed an ethical or moral sense,



but possessed no independent value of its own. Art was seen as merely a subordinate and subservient means pointing to some higher end. Kant in his 'Critique of Judgment' was the first to give a clear and convincing proof of the autonomy of art. Cassirer dwells on the theories that art falls under the category of imitation. These do not restrict the work of art to a merely mechanical reproduction of reality. All of them had to make allowances, to a certain extent, for the creativeness of the artist. It was not easy to reconcile these two demands. He then points out that the true aim of art is more than imitation; the creativeness of the artist is very important. Rousseau rejected the traditional theory of art. He saw art, not as a reproduction of the empirical world, but as an overflow of emotions and passions. Beauty in the traditional sense of the term is by no means the only aim of art; it is a secondary and derivative factor. Cassirer stresses that art is "neither an imitation of physical things nor a mere overflow of powerful feelings. It is an interpretation of reality not by concepts but by intuitions; not through the medium of thought but through that of sensuous forms." He further states: "To give aesthetic form to our passions is to transform them into a free and active state. In the work of the artist the power of passion itself has been made a formative power." Note the last sentence! This all applies to the artist. What of the spectator? The artistic process is a dialogical and a dialectic one. Not even the spectator is left to a merely passive role. "We cannot understand a work of art without, to a certain degree, repeating and reconstructing the creative process by which it has come into being. By the nature of this creative process the passions themselves are turned into actions." Art becomes a means of self liberation. It must always give us motion rather than mere emotion. Finally, it must be remembered that it is characteristic of the nature of man that he is not limited to one specific and single approach to reality, but can choose his point of view and so pass from one aspect of things to another. The artist feels the inward meaning of things and he externalizes his feelings. This externalization is the highest and most characteristic of artistic imagination. And may we remember one of the greatest triumphs of art is to make us see commonplace things in their real shape and in their true light. (Cassirer, 1951)

The core business of Art is to communicate and give expression to what is revealed within you. Art in the Christian sense, is a form of prophecy.

There are 4 levels of communication:

1. From God to humans. God is the origin of everything and is always the first one to speak. We see this time and again with all the great men in the Bible, God always came to them before they came to God.
2. From humans to God.
3. From humans to humans.
4. From Christians to non-Christians. (Keizer 2003)

It must be pointed out while there are close connections between religion and art, they are not the same, there are real differences between them. The following are some of the differences:

1. Religious beliefs may be enshrined in art. Aesthetic experience may evoke a religious experience or worship.
2. As already pointed out, art has its own autonomy. So does religion. They are, however, different in substance and nature.
3. Art reflects the existence of man in things, religion points to the existence of all things in God.



# Art and the Church

4. Kierkegaard pointed out that the aesthetic (art) deals mainly with feelings. And religion with existing.
  5. Aesthetics deals with the routines of life, religion with God's revelation about external life. Jesus said: "I am the way, the truth, and the Life; no man cometh unto the Father, but by me." (John 14:6)
  6. Aesthetic life is what one has with other men, but the religious life is what one is before God.
  7. Aesthetics deals with our sense of the sublime, religion with our sense of the sacred and holy.
  8. Aesthetics deals with beauty, religion with ultimate worth.
  9. Art brings pleasure, religion also occasions worship.
  10. Art involves a sense of amazement, religion a sense of adoration.
- These differences sometimes overlap and could be concurrent, but are nevertheless distinguishable. (Geisler & Feinberg, 1992:342-343, in Steyn 2003c)

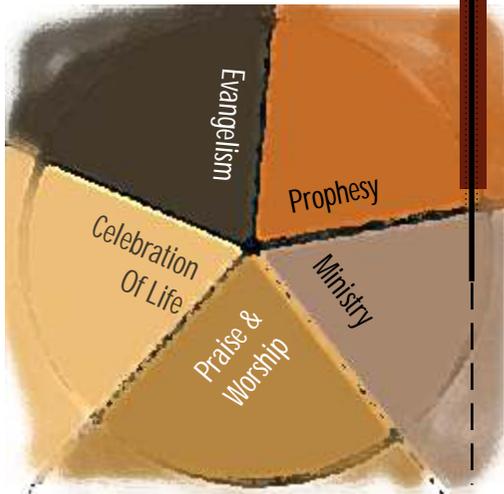


FIGURE 26: Christian Art.

32

FIGURE 26: Christian Art. (Keizer, 2003)



When God created the earth and everything on it, it formed a whole; everything was in harmony with God. God made man in His image. Genesis 1:26 "Then God said: 'Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds in the air, over the livestock, over all the earth, and over all the creatures that move along the ground.'" (NIV, 1985:7) Adam and Eve ate of the fruit from the tree of Knowledge of Good and evil, and immediately this harmony was broken. God said: Genesis 2:16,17 "You are free to eat from any tree in the garden, but you must not eat from the tree of the knowledge of Good and Evil, for when you eat of it you will surely die," when God looked for Adam that evening He found that there was something missing in Adam and Eve. There was a broken image of God in them because they had sinned. God later restored this broken relationship by salvation through His Son, Jesus Christ. In the Christian view only a whole human being has this image of God restored in him/her. In other words, a human that has accepted salvation through Jesus Christ.

How does this apply to the Art world? When your relationship with God has been restored, God can work prophecy and healing through the creativity he has grafted in you. Art in the Christian sense has 5 sides to it as illustrated in Figure:26.

Art in the Church is a form of prophecy. It should give direction. It is also a ministry giving people hope and comfort. It should bring healing. The true story of a woman sculptor goes like this. She made a sculpture of a woman with broken joints that had been fixed with nuts and bolts. This illustrated that we as humans are broken and that God comes and heals us. Another woman saw the sculpture and was caught up in its message. But the message for this woman was different. She had joint problems resulting in artificial bolts inside her arms and legs. The moment she looked upon this sculpture of mended joints, she was healed. The reaction to the ministry through art is praise and worship. This in itself is a form of art. From this there is a celebration of life. The next step is evangelism through art forms. At present most Churches only allow art when it comes to the part of Evangelism, which is very unfortunate. (Keizer 2003) Being artistic means being responsible. Designing a Church building implies huge responsibilities. Art is in its nature prophetic and should be applied with sensitivity towards God's plan. In today's church there is too little emphasis on symbolism and portrayal of the Christian faith. Over the past years the Church has shown an inability to keep up with the changing technology and social trends; also the arts.

We live in a visually orientated world and the Church should comply

Concerning the Christian Church certain matters must be pointed out, with the hope that these will give a proper Christian perspective on art as such.

1. Aesthetics, good taste, art are not direct or explicit Biblical concerns. In the Old Testament, the law is entirely ceremonial and moral. When it is not specifying strictly religious observances, it is pointing out guidelines for behaviour. All its imperatives are liturgical or ethical. If there are artistic, architectural or domestic specifications, they are all determined by religion. It was Godliness rather than taste that was taught. Even in the New Testament there is an absence of cultural concerns. Paul is not curious about the cultures of the people he ministered to. To him they represented the potential converts, people who needed to accept Jesus Christ as their Savior, people who needed to be saved. (2 Corinthians 5: 17-19) That is the focal point of his interest in them. He is seeing something that others do not see. The good news of the Christian religion is for all. That means for all cultures, for male and female. All need to be changed by the saving power of Jesus Christ. Acceptance by God is in and through Christ. It is by faith alone. The only disqualification is one's own unwillingness to respond to God's message. In Titus 2: 13-14, we read of "Our great God and Savior, Jesus Christ, who gave Himself for us to redeem us from all wickedness and to purify for Himself a people that are His very own, eager to do what is good." Every culture may thus find renewal.

2. What has been stated above does not mean that art is excluded. In fact, Christianity generates culture and its different forms. All forms of art have felt the influence of the Bible and Christianity. Also architecture as a form of art is very relevant to the Christian Church. Christians believe in the goodness and beauty of creation.

3. And then, we are to serve God by developing our latent capacities and talents in the arts, science and all skills. God gave Adam a mandate to attend His garden. Biblical living is God-centered, and is concerned with obedience and the furthering of God's praise in this world. Art and cultural activity are relevant to both.

4. All who are in any way involved in the Church ministers, elders, deacons, architects, artists, garden landscapers fall under God's mandate to man to tend His garden. As regards the Church, they must take cognizance of:

- a.) The mission of the Church
- b.) The nature of the Church
- c.) The history of the Church
- d.) The beliefs of the Church
- e.) The needs of the Church
- f.) The present day atmosphere in which the Church exists and operates.
- g.) Possible problems and challenges that the Church may have to face in the days to come.
- h.) The opportunities afforded the Church in the present day times. (Packer & Howard, 1985: 170-172, in Steyn, 2003c)

#### Referred Works:

Appleyard B. Understanding the Present. London: Picador

Cassirer, E. 1951. An Essay on Man. Yale University Press.

Davis J.J. 1985. Let the Bible teach you Christian Doctrine. Exeter: The Paternoster Press.

Geisler N & Feinberg P. 1992. Introduction to Philosophy. Michigan: Baker Book House.

Lewis C.S. 1980. Christian Reflections. Glasgow: Collins

Packer J.I. & Howard T. 1985. Christianity: The True Humanism. England: Word Publishing.

Wells, D. 1994. God in the Wasteland. Michigan: Eerdmans Publishing Co.



# Art and the Church

## Philosophy of the Arts

EGYPTIAN

GREEK-ROMAN

HEBREW-CHRISTIAN

	EGYPTIAN	GREEK-ROMAN	HEBREW-CHRISTIAN
ART IS...	Art is life and death. It captures the powers of heaven. It is used to manipulate.	Art is a reflection of life. It is a copy of life.	Art is an expression of the life of Christ in the artist. It is a form of prophesy and healing.
I AM...	I am an artist.	I am an artist who happens to be a Christian. A Christian artist.	I am a Christian who happens to be an artist. An artistic Christian.
ART AND GOD...	Art is God.	Art replaces God. It is about the mystic and magic of it.	Art reveals God. It shows the heart and mind of God. It makes God tangible and understandable in human terms.
ART AS TOOL...	Art is man's tool to manipulate God.	Art is a tool to manipulate other people. It operates emotions.	Art is God's tool to give life, direction and to express Himself.
FOCUS...	The focus is on the fulfillment of man.	The focus is on the art form i.e. Art activity, drama...	The focus is on my relationship with God as an artistic Christian.

Table 1: Philosophy of the Arts. (Keizer. 2003)



Christianity lends itself to the use of symbols. It is clear from the progress of Church design over the past few decades that there is at present a longing amongst the believers to experience God in the design. Symbolism has once again become vitally important. The design should portray the Christian message. (Swanepoel, 2003)

# Christian Symbolism



FIGURE 27: The young lady.



FIGURE 28: Road Sign.

36

FIGURE 28: Road Sign.

FIGURE 29: Combination. (Covey, 1994:26)

It is vitally important to understand the context in which certain symbols are found. Definition of a symbol: 'When one familiar object is replaced by another familiar object.' (Owen, 1992: viii-x) The meaning of a symbol is mostly determined by:

- Context of the author/receiver
- Context of the symbol
- Context of the symbolic network

Confusion with the correct meaning of a symbol is explained in the following example:

A road sign with an 'S' printed on it is interpreted by three different persons in the following ways:

1. The first person sees the sign and immediately thinks the 'S' stands for snakes and that he should watch out for snakes on the road. This is not a logic deduction since snakes hold no danger for vehicles and is not worthy to be represented on a road sign. He is not considering the context of the author.
2. The next person interprets the sign to be an indication of a scenic route. He is not considering the context of the symbol. The 'S' is situated inside a triangle, meaning danger.
3. The third person interprets the sign literally and looks for S's on the road. He is not considering the context of the network, in other words that it is a road sign relating to the safety of vehicles. (Barr, 1987:274-275)

People perceive differently because they have different backgrounds and prior experiences. Look at the picture on this page. Turn to the previous page and look at the first picture.(FIGURE 27) What do you see in the picture on this page?(FIGURE 29) You possibly see a beautiful young lady? Now, turn the page and look at the third picture. (FIGURE 46) Look again at the second picture. What do you see? It might be an old lady, not very pretty to look at.



FIGURE 29: Combination.

The Cross:

The cross in the Christian realm is a symbol of Jesus Christ and the salvation through His death and resurrection. Even before His crucifixion Christ admonished His disciples that if they were to be His followers they had to carry the cross. Matthew 16: 24, 25. 'Then Jesus said to His disciples: "If anyone would come after Me, he must deny himself and take up his cross and follow me. For whoever wants to save his life will lose it, but whoever loses his life for me will find it."' (NIV, 1985:1466) At first they did not understand that Jesus was referring to a symbolic cross, a cross of self denial. The cross symbolizes Christianity since Jesus suffered and died on the cross at Calvary. Over centuries crosses were placed on altars, roofs of churches, graves, in the homes of people and in public places. Some people even wear it around their necks.

The Christian cross has a clear and significant meaning. It is the symbol of eternal life, redemption and resurrection through faith. The cross on which Christ had breathed his last was made of wood and was probably in the Latin Shaped form because it was a Roman crucifixion. Figure :30 demonstrates this form. This kind of cross consists of an upright pole with a horizontal beam approximately a third from the top. Romans used crosses for the execution of criminals and slaves. The condemned had to carry the cross to the place of execution. In the Roman law there was no limit to scourging, Christ was stripped of his garments and scourged beyond recognizable shape, and still he had to carry the cross on his lacerated back. Although Jesus healed the sick, worked wonders and brought a message of love and hope, he was mercilessly crucified. In the Modern world, Christians do not regard the cross as an object of execution but a glorious symbol of Christ's sacrifice for all mankind. (Solomon, 2002:48-60) The crucifix is the image of a cross with the body of Christ fixed to it. This is symbol of Jesus' victory over death and also as the man of grief. (Bronswijk, 1987:80)

The early Christians did not use the cross as a symbol because it was a sign of execution and disgrace. They rather used the 'Fish' symbol. Only during the fifth century did the Christians adopt the cross as a symbol for Christianity. One of the early Christian crosses is the Labarum. It is a combination of the capital letter P, the Greek cross and the Latin cross. See Figure :36. In the early days and today it is used as an abbreviation for 'Jesus Christ'.

Most of the early surviving crosses are revealed in the mosaics of the Basilican Churches. These crosses are in the Latin form with elaborate design and usually made of gold, silver and adorned with jewels. The different precious stones had significant meanings. The ruby and garnet represent the blood of Christ. Beryl, jade and other greenish stones signify regeneration. Pearls symbolize purity. (Solomon, 2002: 48-60)

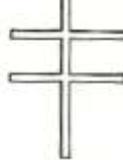
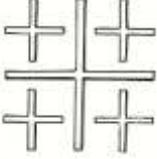
		
FIGURE 30: Latin Cross	FIGURE 31: Greek Cross	FIGURE 32: Tau Cross
		
FIGURE 33: Andreas Cross	FIGURE 34: Gaffle Cross	FIGURE 35: Cardinal's Cross
		
FIGURE 36: Labarum / Christogram		FIGURE 37: Patriarchal Cross

TABLE 2: The Crosses

- FIGURE 30: Latin Cross. (Bronswijk, 1987:65)
- FIGURE 31: Greek Cross. (Bronswijk, 1987:65)
- FIGURE 32: Tau Cross. (Bronswijk, 1987:65)
- FIGURE 33: Andreas Cross. (Bronswijk, 1987:65)
- FIGURE 34: Gaffle Cross. (Bronswijk, 1987:65)
- FIGURE 35: Cardinal's Cross. (Bronswijk, 1987:65)
- FIGURE 36: Labarum / Christogram (Koortz, 1974:102)
- FIGURE 37: Patriarchal Cross. (Bronswijk, 1987:65)

**Agnus Dei:**

In Latin, this means literally, 'The Lamb of God'. This symbolizes the crucifixion of Christ and his sacrifice to his followers and his resurrection. It heralds the image of life overcoming death. The Lamb points to Christ. (Solomon, 2002: 62) In the New Testament, the Christians are compared with a flock of sheep and Jesus with the Shepherd. (Bronswijk, 1987:25)

John 10:14. 'I am the good Shepard, I know my sheep and My sheep know me just as the Father knows me and I know the Father and I lay down My life for the Sheep.' (NIV, 1985: 1616)



FIGURE 38: Agnus Dei.

**Alpha and Omega:**

These are the first and last letters of the Greek alphabet. It also symbolizes the beginning and end of the cosmic creative process in Revelation. Revelation 21:6. "He said to me: 'It is done. I am the Alpha and the Omega, the Beginning and the End. To him who is thirsty I will give drink without cost from the spring of the water of life.'" (NIV, 1985: 1949) The image signifies the power of God as an initiating creative force. In this lies the potential fulfillment of the theological process. The word omega suggests freedom from all limitation. (Solomon, 2002:63)



FIGURE 39: Alpha and Omega.

**Angels:**

The word angel originates from the Latin word angelus, and from the Greek word angelos, meaning messenger and divine being. (Solomon, 2002:64)



FIGURE 40: Angel.

**The Banner:**

This is the symbol of victory. It is usually depicted along with the lamb as a symbol of victory over death. The banner depicted with the cross means that he who has died to himself is living. For this reason Christ is sometimes depicted with a banner as he rises from the grave. (Solomon, 2002:71)



FIGURE 41: The Banner.

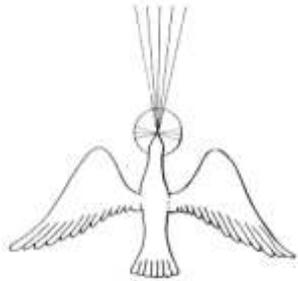


FIGURE 42: The Dove.

**The Dove:**

The dove refers to purity and peacefulness and symbolizes the Holy Spirit. (Bronswijk, 1987:19) Then it also refers to the reconciliation between man and God, spirit and matter and is the symbol of God's love for His creation. The New Testament documents that the Spirit of God descended like a dove. (Solomon, 2002:73) Mark 1:9-11. At that time Jesus came from Nazareth in Galilee and was baptized by John on the Jordan. As Jesus was coming up out of the water, he saw heaven being torn open and the Spirit descending on him like a dove. And a voice came from heaven: "You are my Son, whom I love; with you I am well pleased." (NIV, 1985: 1493)



FIGURE 43: The Dragon.

**The Dragon:**

In Greek the word drakon, means dragon or serpent, addressed in Revelation as Leviathan. The Greek word dermokai, means 'to see'. The main enemy of man's spirit in the world is that of sight. The dragon devours his free spirit. Lucifer means bringer of light while he is the prince of darkness. The killing of the dragon in Christian art symbolizes the overcoming of forces that hold man bondage. (Solomon, 2002:73)



FIGURE 44: The Eagle.

**The Eagle:**

This is a symbol of the victory of higher spiritual forces over lower terrestrial ones. The eagle has the ability to survey the earth from great heights. Isaiah 40:29-31. "He gives strength to the weary and increases the power of the weak. Even youths grow tired and weary and young men stumble and fall; but those who hope in the Lord will renew their strength. They will soar on wings like eagles; they will run and not grow weary, they will walk and not grow faint." (NIV, 1985: 1073) The Eagle is also a symbol of Christ's victory in His ascension. The eagle flies higher than any other bird and his eye can handle the light of the sun. (Bronswijk, 1987:17)

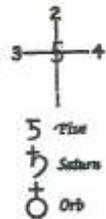


FIGURE 45: The Five Wounds.

**The five wounds:**

These were the five wounds inflicted upon Christ when he was crucified. They include the two wounds in his hands and the two in his feet and then the one in the side of his breast. (Solomon, 2002:77)



FIGURE 46: The old lady.

FIGURE 42: The Dove. (Bronswijk, 1987:19)

FIGURE 43: The Dragon. (Bronswijk, 1987:105)

FIGURE 44: The Eagle. (Bronswijk, 1987:17)

FIGURE 45: The Five Wounds. (Solomon, 2002:77)

FIGURE 46: The old lady. (Covey, 1994:45)

**Evangelist:**

In Latin it means 'Gospel' and in Greek 'good tidings'. The Evangelists are the writers of the four Gospels: Matthew, Mark, Luke and John. The four evangelists are expressed in the four elements of the universe: air, fire, earth and water.

Matthew (gift from God) is related to air because he evaluates as a man, sorting the happenings with clarity and formal accuracy. He speaks of the human origin of Christ.

Mark is related to fire. His energy is directed to drawing man out of error.

Luke (Light) is represented by earth. He is more intimate in his writings.

John (God is gracious) he is related to water. He has visionary qualities exceeding the limits of the other three.

The evangelists are associated with the following when depicted in art:

Matthew a man's head

Mark a lion

Luke a bull

John an eagle

These four images are also used to depict the Four Living Creatures in Revelation. (Solomon, 2002: 76)



FIGURE 47: The Four Evangelists.



FIGURE 48: Mark the Lion.

**The Lily:**

In Christian art it is a symbol of the chastity and purity of the Virgin Mary. The lilies in the crown of king Solomon denote kingly and perfect love. A lily depicts the love from a higher Being, God, to a lower, mankind. (Solomon, 2002:81)



FIGURE 49: The Lily.

**Oil:**

It is the symbol of love and the power of compassion. Oil burns, thus illuminating error with the light of Wisdom. (Solomon, 2002:83) Luke 8:16-17. 'No one lights a lamp and hides it in a jar or puts it under a bed. Instead, he puts it on a stand, so that those who come in can see the light. For there is nothing hidden that will not be disclosed, and nothing concealed that will not be known or brought out into the open.' (NIV, 1985: 1554)

Oil is also used for anointing and healing. James 5:14,15. 'Is any one of you sick? He should call the elders of the church to pray over him and anoint him in the name of the Lord. And the prayer offered in faith will make the sick person well; the Lord will raise him up.' (NIV, 1985:1885) Luke 10:34. 'He went to him and bandaged his wounds, pouring on oil and wine.' (NIV, 1985:1560)

TABLE 5: Symbols



FIGURE 50: The Trefoil.

**The Trefoil:**

This design is often used in the arches and windows of Churches. This becomes the symbol of the Holy Trinity. The Trinity is a division of absolute power. It contains three aspects that have different functions but makes a whole. (Solomon, 2002:89)



FIGURE 51: The Triquetra.

**The Triquetra:**

This image, formed of three interlacing almond shapes, also symbolizes the Trinity. (Solomon, 2002:91)



FIGURE 52: The Fish.

**The Fish:**

Ichthos refers to Jesus, the Great fisher of men. The letters in the word spell 'Jesus Christ Son of God Savior'. This symbol was often used in times of persecution for fellow believers to identify secret places of worship. (Solomon, 2002:92) It is one of the oldest and most important symbols in Christianity. The fish lives in the water which is symbol of the baptism. The last request of Jesus before he went to heaven was that the Christian believers should be fishers of men. (Bronswijk, 1987:32)

FIGURE 50: The Trefoil. (Solomon, 2002:89)

FIGURE 51: The Triquetra. (Solomon, 2002:91)

FIGURE 52: The Fish. (Bronswijk, 1987:32)

One symbolizes the undivided unity and is the mother of all numbers. Therefore one is a symbol of God, the Highest being whose might created the universe. (Bronswijk, 1987:59)

1

Two directs to the division of the unity. It shows two parts of one, referring to man and woman, the Old and New Testaments, the two tables containing the Law and to Christ and His bride, the Church. (Bronswijk, 1987:68) Two is also the number of the witnesses. (Kiene, 1977:43)

2

Three is the number of the whole, the victory over the division of two. It has a beginning, middle and end. The cosmos consists of three parts: the heavens, the earth and the under world. It also refers to the past, present and future. It reminds us of three aspects of our faith: faith, hope and love. Most importantly it directs to the Trinity: Father, Son and Holy Spirit. The Resurrection of Christ took place on the third day. (Bronswijk, 1987:58)

3

Four points to the universe expanding in the four wind directions. It also represents the four elements found on earth: air, water, fire and earth. It also symbolizes the four Gospels found at the beginning of the New Testament and four evangelists: Matthew, Mark, Luke and John. (Bronswijk, 1987:69)

4

Five is the number of Christ, the Man dependant upon God. (Kiene 1977:45)  
It also represents the five wounds of Christ as He hung on the cross. (Bronswijk, 1987:70)

5

42

Six is the number of the last creation day where the seventh day was a day of rest. It refers to the six periods of world history. (Bronswijk, 1987:71)

6

Seven points to the perfection of the universe. Seven is a holy number. It is used numerous times in the book of Revelation. (Bronswijk, 1987:72)

7

Eight is the number of the holy unity and the new creation. It is the double of four. Eight people are saved in the arc of Noah. (Bronswijk, 1987:55)

8

TABLE 7: Symbols-numbers

9

Nine is the symbol of harmony and higher perfection, above human nature. It is the number of the angles. (Bronswijk, 1987:65)

10

Ten is used extensively in the Bible. Human have ten fingers and ten toes; ten generations from Adam to Noah, ten plaques in Egypt, ten commandments, ten virgins and ten sick men. It is the measure of all other numbers. (Bronswijk, 1987:68)

TABLE 8: Symbols-numbers

Possible symbolic meaning in a church building:

God must be represented as the Trinity, with the Son as the entrance, the Father inside and the Holy Spirit as our companion before we enter and when we leave.

Jesus says in, John 10:9, "I am the gate, whoever enters through Me will be saved. He will come in and go out and find pasture." (NIV, 1993:1191)

Jesus is symbolized by a gate and also by the cross. The entrances of the Church building should represent Jesus in these ways. Members and visitors entering the building must be made aware of Jesus. Jesus is also the bread of life. "I am the living bread that came down from heaven. If anyone eats of this bread, he will live forever." Hearing God's word through the preaching of the Gospel will nourish their Spiritual lives.

"No one can come to Me unless the Father who sent me draws him, and I will raise him up at the last day." The Father draws one to the inside, to hear the preaching of the Gospel and receive the blessings from the Father's hand. 'Visual lines' must draw the member or visitor towards the inside. These 'visual lines' can be in the form of biblical plants or trees or other architectural features.

The holy Spirit is represented by the Dove and by water. Flowing water must be visible in the procession towards the entrance. It is a symbol of the Comforter that God sent when Jesus was taken up into heaven after His resurrection. The water must remind the people of the constant presence and guidance of the Holy Spirit. When leaving the building, the flowing water reminds that it is the Holy Spirit that works within people to share the Good News with others and that they should spread the blessings beyond the boundaries of the Church site.

The architecture must in itself, through the use of forms and symbolism, declare GOD!

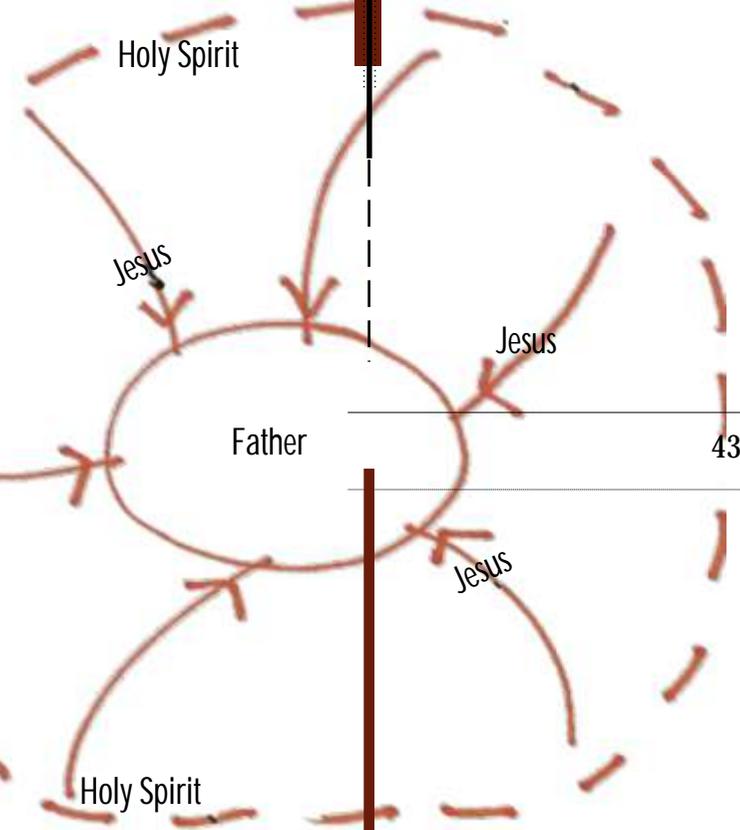


FIGURE 53: Symbolism of the Trinity in the procession towards the building.

# Principle based Architecture

A Christian service, sermon or ceremony can be held anywhere: in the veldt, under a tree, in a temporary structure or a building. The only requirement is that God finds the congregation gathering in sincere worship and prayer. There are thus no rules that a sermon must take place in a specific space. Thus the danger of Churches being erected without the influence of principle based Church architecture.

In the 19<sup>th</sup> century and start of the 20<sup>th</sup> century, church architects found safety within certain historical building styles such as the Gothic and Neo-Classical styles. No questions were asked since these were naturally seen as the correct application for any church design. With the dawn of the modern movement and technological, economical and social development, the historical styles became unpopular. Structure becomes the architectural expression with 'form follows function'. With this new movement away from the secure historical styles, Church designers are left in a vacuum. Only in 1934 is the first book, concerning this problem, released: 'The Church Architecture of Protestantism' by A.L. Drummond. (Koorts. 1974:2)

To produce a set of principles guiding protestant church design, two sources can be used:

1. The Holy Bible.
2. The history of Church design.

From a Christian viewpoint, everything taken from the Bible is seen as the norm, and lessons learned from history will be viewed critically.

## Architectural principles

Peter Hammond: "The form of the Church must spring from its liturgical function." It is the task of the designer to create architecture from stone, brick, concrete and timber while visualizing the Christian sermon. (Koorts. 1974:12)

## Where architecture and Theology meet

The Church is the body of Christ. Christ is the head of the church and the church consists of all the reborn Christians. John 4:23,24 'Yet a time is coming and is now come when the true worshipers will worship the Father in spirit and truth, for they are the kind of worshipers the Father seeks. God is spirit, and His worshipers must worship in spirit and in truth.' (NIV, 1985: 1600) The place of worship is irrelevant, because true worship must be in keeping with God's nature, which is spirit. Truth is associated with Christ, a fact that has great importance for the proper understanding of Christian worship. John 14:6 'Jesus answered: "I am the way and the truth and the life. No one comes to the Father except through me."' (NIV, 1985: 1625)

In the Old Testament God 'visited' His people within 'the most holy place' of the Tabernacle. The Ark served as the sign of God dwelling among His people. At the end of the Israelites' journey they built a temple where worship took place.

In the New Testament the meeting between God and man takes place in the church building, also built with human hands. Similar to the Temple and Tabernacle, the Church building serves not only as a place of worship, but also as the symbol of the body of Christ. The visible structure is a reminder of that which is invisible. Many authors agree that the Church form must be the bearer of the Christian message. Just as liturgy is theology in action, so architecture is theology in material structure. Church architecture expresses theology. (Bruggink & Droppers.1965) Architecture has the inbuilt ability to create mood, portray a certain idea and radiate a certain spirit. In Church design, architecture must express the Christian message. Hence the physical structure surrounding the worshiper, must direct the thoughts to everything which is holy. It must facilitate true worship. (Koorts. 1974)



The Primary Source of Principles:

According to Koorts (1974), the architecture emanates from the understanding of the Christian sermon. The word is brought forth from the liturgical centrum and the response comes from the congregation in the congregational space.

The meaning and purpose of the sermon goes hand-in-hand with the relationship between God and man. God created humans with a free will and so Adam and Eve committed sin. Eventually God saw that the human race had become so corrupted with sin and has no love for their God anymore that He decided to destroy everything on the earth and start all over. On all the earth there was only one righteous man, Noah. God saved him and his family and breeding pairs of all animals and birds. He sent a great flood. Genesis 6:17-12. 'For 40 days the flood kept coming on the earth, and as the waters increased they lifted the ark high above the earth. The waters rose and increased greatly on the earth, and the ark floated on the surface of the water. . . . all the high mountains under the entire heavens were covered. The waters rose and covered the mountains to a depth of more than 20 feet.' (NIV, 1985:1912)

God is righteous but also love and He mended the broken relationship between Himself and man with salvation through His only Son. Man finds himself in a position of pure grace. Man is undeserving of eternal life and can offer nothing in himself to obtain it. This is why the reborn Christian comes in awe and wonder when he stands before God in His house. Man is humble and submissive in his/her awareness of sin and imperfections. Man is overwhelmed and grateful for the sacrifice and atonement of Christ. Man is bursting with joy for the salvation through Jesus. The focus is on God: the absolute, the totally different, the eternal one, raised above space and time. Why not then reflect this in the architectural space of worship? (Koorts. 1974)

The holiness of God is indeed reflected in creation. Romans 1:20. 'For since the creation of the world God's invisible qualities His eternal power and divine nature have been clearly seen, being understood from what has been made, so that men are without excuse.' (NIV, 1985: 1707) Psalm 19:1,2. 'The heavens declare the glory of God, the skies proclaim the work of His hands. Day after day they pour forth speech, night after night they display knowledge.' (NIV, 1985: 803) It is thus not a far fetched idea of the artist creating something that reflects the glory of God. God is in the end the Master Architect and giver of all creativity. Isaiah 28:29 'All this also comes from the Lord Almighty, wonderful in counsel and magnificent in wisdom.' (NIV, 1985: 1055)

The various elements of the sermon go together with certain actions asking careful planning from the architect. These elements include reading from the Bible, evangelism, baptism, communion, prayer, praise and worship and sharing.

In conclusion. The Bible is the foundation whereupon the sermon stands. The sermon, as a function in the church building, will influence the architectural form. From the Bible principles are drawn leading to architectural formation. The Church stands in physical form as the symbol of the body of Christ. (Koorts. 1974)

It is however, important to add at this point, that the design of the Church space is not solely related to the sermon. This would be forced Protestantism. Later in this document, Protestant guidelines for church buildings are discussed. Presently subjects like art, rituals, symbols and mystery are becoming more and more sought after by the believers. These would also then greatly influence the design.





Index of this chapter:

First House of God - the Tabernacle

God's Temple

Early Christian Architecture

Basilican Church Architecture

Byzantine Church Architecture

Romanesque Style Church Architecture

Renaissance Style Church Architecture

Gothic Church Architecture

Baroque Church Architecture

The Church Today

Exploring landmarks in earliest Christian history is a very difficult task. Church historian Kirsopp Lake essayed a self-critical sentiment towards such a task: 'At first sight the historian of religions appears to be faced by a number of clearly distinguished entities, to each of which he feels justified in giving the name of a separate religion. But on further consideration it becomes obvious that each of these entities has been in a condition of flux throughout its history.' (White, 1996)

The following discussion on Church History will start with the Tabernacle and Temple and then continue with Christian Architecture after the death and resurrection of Jesus Christ.



# The Tabernacle

## First House of God...

The Tabernacle is the first habitation that the Living God caused to be built for Him. God gave Moses divine instructions for this unique construction during the forty days and forty nights spent on the holy mountain, Mount Sinai.

God's people could bring a freewill heave offering in the form of materials such as acacia wood, animal skins, spun yarn and various metals and precious stones. Fourteen different kinds of materials were used. The Tabernacle was erected at the base of Sinai in one year. For about 500 years priests from the family of Aaron performed services. These services comprised the presentation of the many offerings and worshipful homage through the burning of incense before the Lord. The tent was also the place where God manifested Himself and where He proclaimed His thoughts and council through Moses. Exodus 25:22. 'There, above the cover between the two cherubim that are over the ark of the testimony, I will meet with you and give you all My commands for the Israelites.' (NIV, 1985: 123) God's desire for fellowship with man was to find its fulfillment there. Through the Anointed one of God, Jesus Christ, it was and will be a reality. (Kiene, 1977)

Exodus 35:20-29. 'Then the whole Israelite community withdrew from Moses' presence and everyone who was willing and whose heart moved him came and brought an offering to the Lord for the work on the Tent of Meeting, for all its service, and for the sacred garments. All who were willing, men and woman alike, came and brought gold jewelry of all kinds: brooches, earrings, rings and ornaments. They all presented their gold as a wave offering to the Lord. Everyone who had blue, purple or scarlet yarn or fine linen, or goat hair, ram skins dyed red or hides of sea cows brought them. Those presenting an offering of silver or bronze brought it as an offering to the Lord, and everyone and anyone who had acacia wood for any part of the work brought it. Every skilled woman spun with her hands and brought what she had spun blue, purple or scarlet yarn or fine linen. And all the woman who were willing and had the skill spun the goat hair. The leaders brought onyx stones and other gems to be mounted on the ephod and breast piece. They also brought spices and olive oil for the fragrant incense. All the Israelite men and women who were willing brought to the Lord freewill offerings for all the work the Lord through Moses had commanded them to do.' (NIV, 1985: 139)

48

FIGURE 54: The Tabernacle (Batchelor, 1993: 26)

The Spiritual meaning of the dwelling place of God:

The Tabernacle speaks of God as something yet greater. God gives a very detailed description for His dwelling place on earth. The construction and arrangement of His dwelling in the wilderness, as well as all things pertaining to the priesthood, the sacrifices and the worship service, are extremely significant and important to Him. (Kiene, 1977)

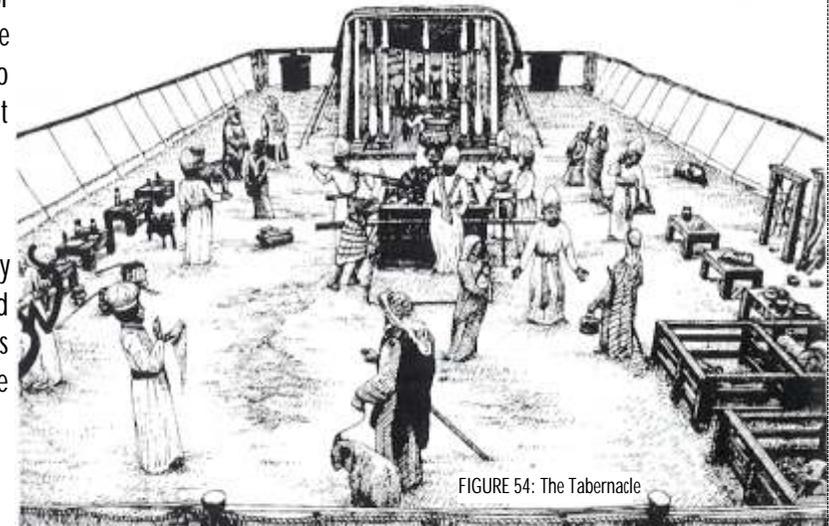


FIGURE 54: The Tabernacle

The Israelites gave with happy hearts for this work. Jesus Christ, who has freed us from eternal death, is worthy of such voluntary support for His work from us also today. The Israelites brought more than enough and then they were restrained from bringing. It should also be our desire today to bring all to the House of God. (Kiene, 1977)

Through the heave offering the construction materials of the Tabernacle was gathered. To fashion these materials required divine wisdom. The Spirit of God filled two gifted men with this wisdom: Bezalel and Aholiab. They instructed each one whose heart God had made willing to aid in the construction of His House. What an impressive picture: multitudes of people compelled by their hearts to help.

Moses and his co-workers erected the Tabernacle according to the plan and thoughts of God. They experienced that most holy moment when the cloud of the glory of God filled the dwelling place. (Kiene, 1977) Exodus 40:34,38. 'Then the cloud covered the Tent of Meeting, and the glory of the Lord filled the Tabernacle. Moses could not enter the Tent of Meeting because the cloud had settled upon it, and the glory of the Lord filled the Tabernacle. So the cloud of the Lord was over the Tabernacle by day, and fire was in the cloud by night, in the sight of all the house of Israel during all their travels.' (NIV, 1985: 144)

For the first time since the creation of the world there was now erected for God a dwelling place on this earth, built according to the heavenly example. (Kiene, 1977)

Every part of the shrine was supplied with carrying poles and rings because the people were on the move. Israel's God was not like the gods of the people around, whose power was confined to the territory where their tribe lived. While His people journeyed as pilgrims, God promised to travel too, continuing to live among them. Only appointed

priests were allowed to serve in the Tabernacle and when the camp was pitched, the tents of the priests were closest. The tabernacle not only signaled God's presence, but also protected the Israelites from the close contact with the awfulness and holiness of God's presence. (Batchelor, 1993)



FIGURE 55: Mount Sinai.

It is most astounding to investigate the detail design, construction, materials and colours of the Tabernacle. Nothing is done without some symbolism or definite meaning. All the details of the Tabernacle constitute a glorious, impressive, pictorial language of God. They point prophetically to the coming Savior and salvation. To understand the Godly intention of all of these elements it is necessary to have a closer look.

# The Tabernacle

## Elements of the Tabernacle

Symbolism and meaning:

Ark - Symbol of God's covenant with the Israelites.

Curtain in the tabernacle - symbolizing sin separating man and God.

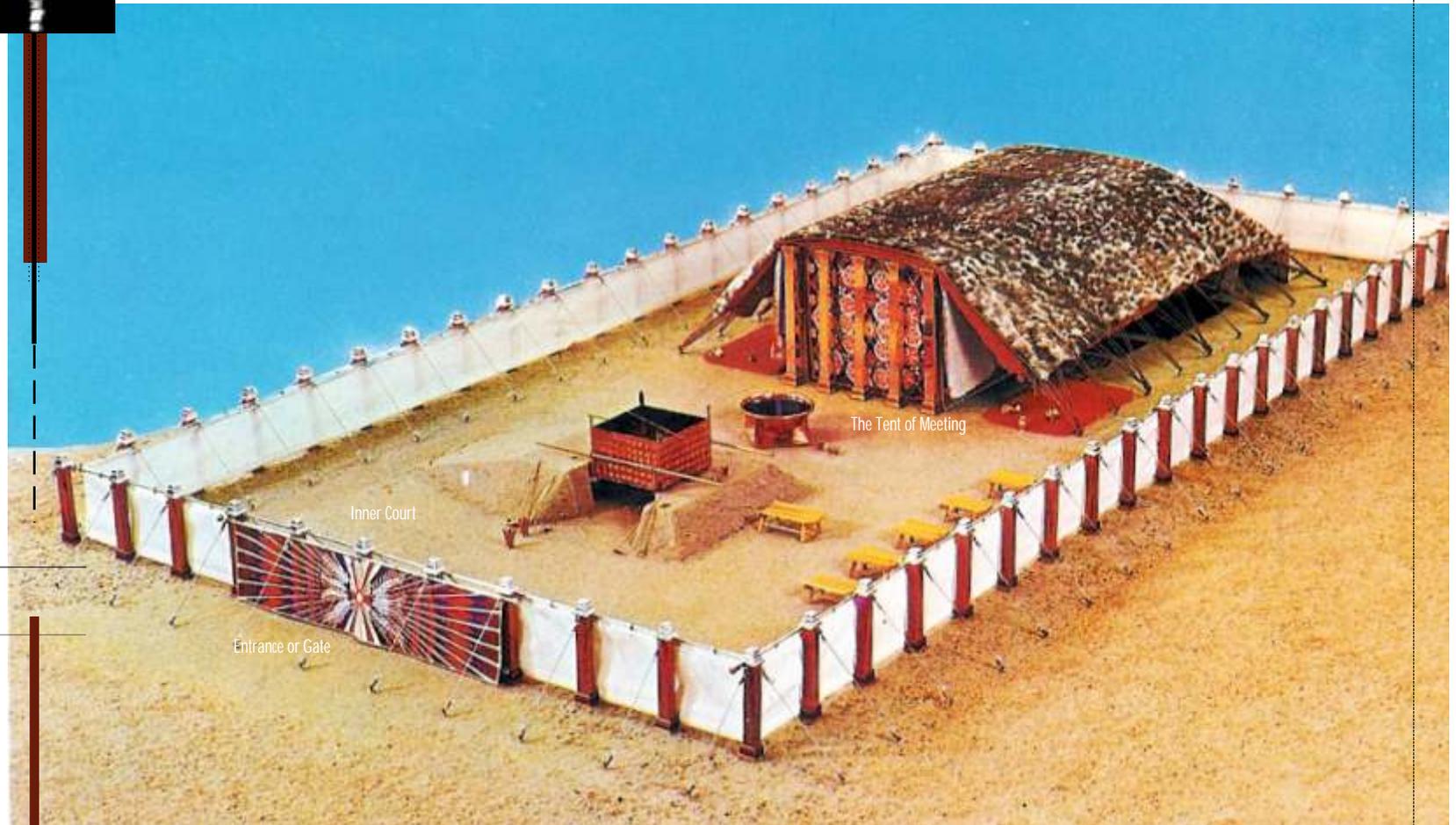
Table for bread offering - twelve loaves of bread one for every section.

Bread for offering - symbol of spiritual food.

Incense altar - burning incense symbolizes the prayers of the people.

Olive anointment - to symbolize that every part is segregated for God.

Offer altar: means by which men mended their broken relationship with God (Vosloo & v Rensburg, 1993:142)



50

FIGURE 56: A representation of the Tabernacle. (Kiene, 1977: 19)

FIGURE 56: A representation of the Tabernacle.

## Elements of the Tabernacle

### The Outer Court

### The Gate or Entrance



FIGURE 57: The entrance.

The only entrance is located on the eastern side. Illuminated by the morning sun, it is a splendid sight to the eyes of the passerby. It is a wide and inviting entrance to the Tabernacle.

The colours of the gate may correspond to the four evangelists and remind us of the wonderful characteristics of Jesus. The four colours are red (scarlet), purple, blue and white byssus. They also appear in the three entrance hangings and the cherubim covering. They are also found in the belts of the high priest and priest's sons.

The Object or Element

Meaning (M) and Symbolism (S)



Red / Scarlet

M: Scarlet is the colour of blood and reminds us of the suffering Servant of God. It also proclaims the earthly and Messianic glory of Jesus. The Gospel of Mark is represented by this colour. (Kiene, 1977:36) S: The red colour symbolizes the blood giving life and love when losing your life for someone else. It also points to the Holy Spirit. (Bronswijk, 1987:67)



Purple

M: Purple reminds us vividly of the glory of Jesus Christ, who is the King of Kings and Messiah of Israel. The purple robe is one of the coronation robes of many kings. It is the colour of the Gospel of Matthew. (Kiene, 1977:36) S: Purple is the holy, godly and kingly colour. (Bronswijk, 1987:66)



Blue

M: Blue represents the Gospel of John. The Son of God comes from heaven. We hear in his own words almost forty times that He was the one sent of the Father as the Heavenly messenger of divine love. (Kiene, 1977:34) S: Blue is the colour of heaven and the heavenly. Blue, together with white, is also a symbol of purity and sinlessness. (Bronswijk, 1987:56)



White

M: Byssus is the finest white cotton wore by King David. The task and intent of the Gospel of Luke is to present our Lord Jesus as the Son of man in His sinless and holy life. The white represents His life without sin. (Kiene, 1977:37) S: White is the colour of light, joy and festivity. The colour worn by priests. It is the colour of glory, innocense and virginity. (Bronswijk, 1987:71)

TABLE 9: Elements in the Tabernacle.

# The Tabernacle

The height of the pillars and the height of the white hanging were five cubits, corresponding to the height of the four coloured gate. Five is the number of Christ, the Man dependant upon God. The distance between the pillars are likewise five cubits. ( Kiene, 1977:45)

Within the Outer Court there are offerings from the people to God. Animals are slaughtered and burned on the brazen altar. The Brazen altar in itself has several symbolic elements and materials. The offerings and related rituals are not important for this study and will not be discussed in detail.

## The Outer Court The Hangings



FIGURE 58: The Hangings of the outer court

Anyone entering the courtyard finds himself totally surrounded by Byssus. He sees shining white everywhere, the colour of purity. A totally new sight in contrast to what he has been used to: the desolate unclean desert. ( Kiene, 1977:39)

## The Pillars

All sixty pillars were made of the same materials. Their bases were of brass, the capitals overlaid with silver and the posts of acacia wood. ( Kiene, 1977:41)



FIGURE 59: The Pillar

# Elements of the Tabernacle

52

FIGURE 58: The Hangings of the outer court ( Kiene, 1977:39)

FIGURE 59: The Pillar ( Kiene, 1977:41)

The Object or Element

The Material or Colour

Meaning (M) and Symbolism (S)

The Hangings

White Byssus

M: The visitor experience a blessed change: once outside and far from God and now inside in the realm of the blessing of the Highest. ( Kiene, 1977:39)

Acacia

Wood

M: The acacia wood is a very beautiful picture of the true humanity of the Son of God. He is the branch out of David's tribe, the sprig and the shoot, as the prophets described Him. ( Kiene, 1977:41)  
S: The acacia symbolizes the immortality of one's soul. (Bronswijk, 1987:38)

Silver

Metal

M: The silver overlaid capitals remind us that 'He gave Himself a ransom for all'. ( Kiene, 1977:41)  
S: In the Bible silver is linked with white to be a symbol of purity and correctness. (Bronswijk, 1987:73)

Brass

Metal

M: The bases of brass reminds us of the voluntary suffering of the Lord Jesus. This extremely fire-resistant metal is a symbol for Him as the one who suffered, was tested and withstood the judgement. (Kiene, 1977:41)

TABLE 10: Elements in the Tabernacle.

# The Temple

## God's Temple

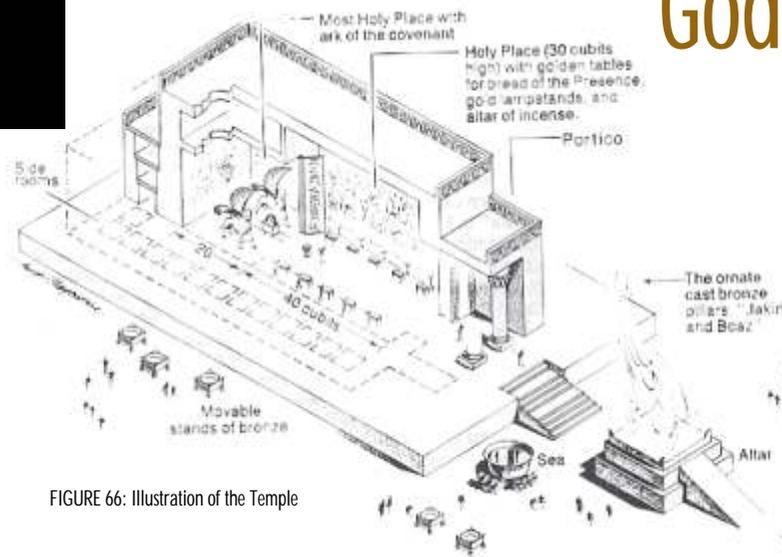


FIGURE 66: Illustration of the Temple

1 Kings 4: 29,20. 'God gave Solomon wisdom and very great insight, and a breadth of understanding as measureless as the sand on the seashore. Solomon's wisdom was greater than the wisdom of all the men of the East, and greater than all the wisdom of Egypt. (NIV, 1985:478) 1 Kings 5: 5. 'I intend to build a temple for the Name of the Lord my God, as the Lord told my father David, when he said: "Your son whom I will put on the throne in your place will build the temple for my Name." ' (NIV, 1985:479)

Solomon's Temple consisted of a porch, the House and the Holy of Holies. This was built some thousand years before Christ, restored or rebuilt by Zerubbabel around 500 BC, and the Third Temple was built by Herod 1 only to be destroyed 70 AD. (Curl, 1991:80)

Solomon's Temple is a magnificent piece of architecture decorated with gold, silver, bronze and cedar wood from the Lebanon. It took seven years to complete. (Vosloo & v Rensburg , 1993: 480) The temple is located adjacent to the king's palace and functioned as God's royal palace and Israel's national center of worship. (NIV, 1985: 481)

Solomon builds the Temple:

1 Kings 5:13-17. 'King Solomon conscripted laborers from all Israel thirty thousand men. He sent them off to Lebanon in shifts of ten thousand a month, so that they spent one month in Lebanon and two months at home. Adoniram was in charge of the forced labor. Solomon had seventy thousand carriers and eighty thousand stone cutters in the hills, as well as thirty three hundred foremen who supervised the project and directed the workmen. At the king's command they removed from the quarry large blocks of quality stone to provide a foundation of dressed stone for the temple.' (NIV, 1985:480) 1 Kings 6:12-14. 'As for this temple you are building, if you follow my decrees, carry out my regulations and keep all my commands and obey them, I will fulfill through you the promise I gave to David your father. And I will live among the Israelites and will not abandon my people Israel. So Solomon built the temple and completed it.' (NIV, 1985: 481)

God answers to Solomon:

Solomon dedicated the temple to God and prayed that he would accept it. 1 Kings 9:2,3. "I have heard the prayer and plea you have made before me; I have consecrated this temple, which you have built, by putting My name there forever. My eyes and My heart will always be there." (NIV, 1985: 489) By its cosmological and royal symbolism, the sanctuary taught the absolute sovereignty of the Lord over the whole creation and his special headship over Israel. (NIV, 1985: 481)

# The Temple

The functions and meaning of the Temple:

1. it prevented the formation of numerous small gatherings where people could easily lose track of the truth.
2. The Temple kept the Israelites together as a nation. Everyone shared the same religion and history.
3. Israel's history was written down and kept at the Temple. It is here where the stories of old were told and traditions passed on to the new generation. Therefore the Temple has part in the formation of the Bible as we know it today.
4. The Temple was a constant reminder that God was in their midst.
5. Because God was experienced in the Temple, it naturally became a sanctuary for the down hearted and sick. People went there to declare their sorrow before the Lord Almighty.
6. This is also the place where confessions of sins took place by means of offerings. Thus it also serves as a place of reconciliation.
7. The temple cannot contain God. It is a merely a symbol of God's presence on earth and in the midst of the Israelites. God's presence on earth emphasizes the responsibility of Christians to live a holy life in thanksgiving to God's grace.
8. God is not only the God of Israel, but wants to reach the rest of the world through Israel and the Temple. (Burden & Ferdinand, 1986:143)

Israel made terrible mistakes. After some time they started to believe that God was only in the Temple and dependent on the Temple space. They thought that humans had created a habitation for God and that Jerusalem will continue to exist as long as the Temple existed. They forgot that nothing can contain God and that God's plan stretched much further than the Israelites. Because the Temple was part of the palace complex, political issues started to govern religion.

The illusion was established that as long as there is a king in Jerusalem, God would protect His people. But the King was taken in exile and the Temple destroyed. (Burden & Ferdinand, 1986:144) Ezekiel 43:7-8. 'He said: "Son of man, this is the place of My throne and the place for the soles of my feet. This is where I will live among the Israelites forever. The house of Israel will never again defile My holy name neither they nor their kings by their prostitution and the lifeless idols of their kings at their high places. When they placed their threshold and their doorposts beside My doorposts, with only a wall between me and them, they defiled My holy name by their detestable practices. So I destroyed them in my anger.'" (NIV, 1985:1288)

Jesus and the Temple:

Jesus spent a lot of his time in the temple and the synagogues. Jesus was not negative about the temple but questioned the current uses for it. The temple had separate parts for pagans, women and then the men. The Jews also believed that the temple symbolized the future of the Jewish identity. It was symbol of the forgiveness for sin; a symbol of the end times and a symbol of the distance between man and God. (Burden & Ferdinand, 1986:146)

The Temple today:

The crucifixion and resurrection of Christ changed the whole outlook of the temple. Until the death of Jesus, the Temple curtain separated the Holy of Holies from the rest. Luke 23:44,45. 'It was now about the sixth hour, and darkness came over the whole land until the ninth hour, for the sun stopped shining. And the curtain of the temple was torn in two.' (NIV, 1985:1587) The death of Jesus, the perfect offer for the sin of the world, removed the distance between God and man. He is our route of salvation. Now there is no difference between people: pagan, man or woman. The temple is not the only dwelling place of God. Each person becomes a temple of God. Every Christian is now a symbol of God's living presence. The temple is no longer the direct symbol of reconciliation but Jesus is now the image of salvation. (Burden & Ferdinand, 1986:146)

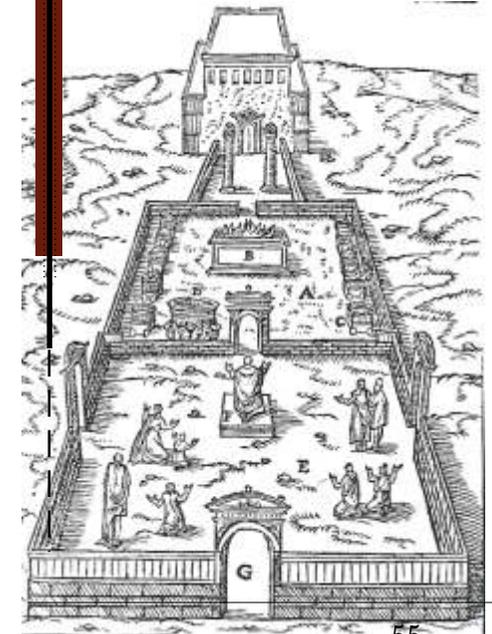


FIGURE 67: Illustration of the Temple

55

FIGURE 67: Illustration of the Temple (Curl, 1991:84)

## Early Christian Architecture

The coming of the Messiah during the Hellenistic Roman Era is the fulfillment of God's promise that he will send his only Son to earth to live as God on earth in a human body. Jesus Christ will then become the perfect offer for the sins of the world because He himself is without sin. (White. 1996)

John 3:16 "For God so loved the world that He gave His only son, that whoever believes in Him shall not perish but have eternal life." (NIV:1598)

2 Corinthians 5:21 "God made Him who had no sin to be sin for us, so that in Him we might become the righteousness of God." (NIV:1769)

After Jesus had died on the cross at Calvary and rose from the dead three days later, He ascended to heaven and the Holy Spirit came down on the disciples. It was only some time later that the first Christian Churches were being built.

Religion is more than a message, and the appeal of the early Christian movement did not lie in its offer of salvation alone. There were many savior gods in the Greco-Roman world. By the fourth century, Christianity had become an official religion of the Roman state. (White. 1996)

In the beginning of the movement, the followers of Jesus met in the homes of members. Acts 5:42 "Day after day, in the temple courts and from house to house, they never stopped teaching and proclaiming the good news that Jesus is the Christ." (NIV:1653) The home is the only place to meet and later during the persecution, meetings are held in catacombs. (Koorts. 1974)

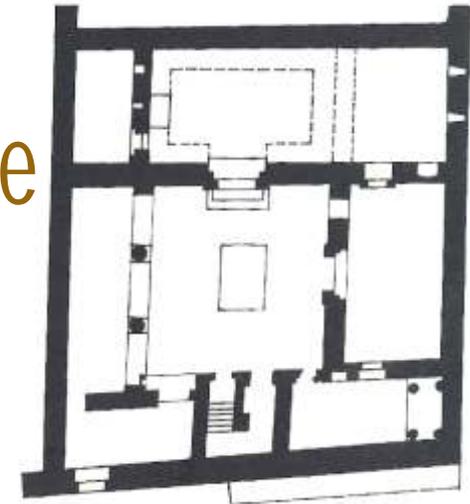


FIGURE 68: Plan of House Church Dura-Europos

Yet, the earliest Christian sources confirm the basic elements. Paul regularly addressed letters to and from 'the Church in the house'. The 'House Church' setting conditioned the nature of assembly, worship and communal organization. It is most significant that the place of assembly was unchanged from its original domestic function. There were as yet no church buildings. (White. 1996)

Within three centuries the situation and character of assembly radically changed, from the 'House Church' to the monumental Church building. From the fourth century onwards the Basilica became a norm of style. In the history of Christianity two landmarks stand out from the architectural tradition: on the one side the 'House Church' from the Pauline period; on the other, the Basilica of the Constantinian Age. One marks the period of primitive beginnings and sectarian identity, the other, an age of emergence into the main stream of Roman society and acceptance as a state religion.

Both the process and the time period of development from House Church to Basilica are crucial in understanding the history of earliest Christianity. It was the period of formation and crystallization of most aspects of worship, Theology, ethics, and organization, during which the Christian movement came to have its recognizable shape and identity.

As to the general course of development of Church building, Krautheimer concludes: 'Until A.D. 200, then, a Christian architecture did not and could not exist. Only the State Religion erected temples in the tradition of Greek and Roman architecture. The savior religions, depending on the specific form of their ritual and the finances of their congregation, built oratories above or below ground, from the simplest to the most lavish but always on small scale. Christian congregations prior to 200 were limited to the realm of domestic architecture, and further to the inconspicuous dwellings of the lower classes. This limitation and particularly the evasion of the architecture of official worship, is something that becomes decisive for the early development of Christian architecture.' (Macon. 1985)

'For the distinction between Christians and other folk is neither in country nor language nor customs. For they do not dwell elsewhere in cities of their own, nor do they practice a conspicuous manner of life. . . Yet while living in Greek and barbarian cities, as each one has been allotted, and following the local customs, both in clothing and in food and in the rest of life, they show forth the wonderful and admittedly strange character of their citizenship. They dwell in their native lands, but as if sojourners. . . They pass their time upon the earth, but they have their citizenship in heaven.' Unknown (White. 1996)

In the early days of Christianity it was seen as one of the many mystery cults, but eventually it is the only one to survive. Early converts are mainly from the dispossessed and downtrodden masses and some from the educated classes. The Christian force gained momentum but not without persecution. Trying to stem the rising tide of their ranks, the emperor Diocletian launched the final official suppression in 303 AD. And ten years later his successor, Constantine, issued the Edict of Milan recognizing Christianity as one of the official State Religions. It was now possible for the Christians to worship openly, and with Constantine's support, an extensive building programme was undertaken. (Fleming. 1995:123)

## Basilican Church Architecture

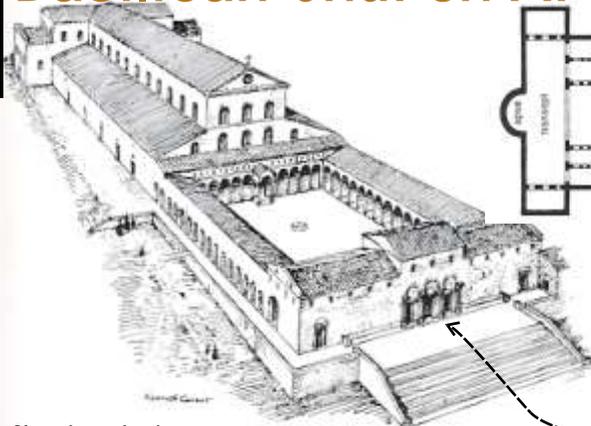


FIGURE 69: Old St. Peter's Basilica, Rome 333 AD

Short introduction:

4th - 12<sup>th</sup> Centuries

There are various theories whereupon the early Christians based the first Church buildings. The most acceptable holds that the architecture is based on law courts. Basilica means 'royal', fit to be the house for the King of kings. (Koorts. 1974)

Examples:

1. S.Clemente Basilica 4<sup>th</sup> century
2. Sant'Apollinare Nuovo, Ravenna 493 526 AD
3. Old St. Peter's Basilica, Rome 333 AD

Characteristics:

The building had a rectangular plan form with a strong vertical axis. The interior space is divided into three parts: the nave and two side aisles. There is a linear axis from the narthex to the apse with rhythmical architectural elements: columns and clerestory windows. The floor plan is very simple. There is a division of space into a vestibule entrance, known as the narthex. The nave is the larger space in the middle of the assemble of the congregation. The nave is separated from the side aisles by rows of columns.

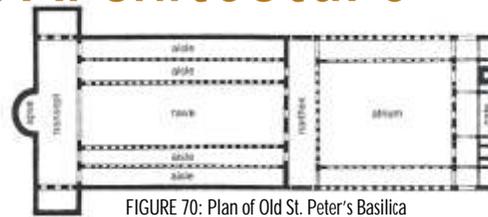


FIGURE 70: Plan of Old St. Peter's Basilica

At the far end of the Basilica is the apse, which frames the altar and provides seats for the clergy. (Fleming. 1995) Some Basilicas had an additional atrium with roofed colonnades to become an extra gathering space before entering the Church through the narthex. (Koorts. 1974)

The experience of the procession:

The one space flows into the next space along the linear axis towards the apse. Church members would enter the atrium. The narthex is entered and one proceeds along the linear axis to the nave. The person finds himself looking straight at the liturgical space. All the architectural elements inside the nave create the impression of movement along this linear axis. All the lines flow in the same direction. When the believer reaches the nave he or she can take part in the communion bread and wine or offer the thanksgiving. Then the member moves to his/her place in the side aisles. A real personal procession towards the presence of God took place. (Koorts. 1974)

FIGURE 69: Old St. Peter's Basilica, Rome 333 A (Fleming. 1995:129)

FIGURE 70: Plan of Old St. Peter's Basilica (Fleming. 1995:129)

FIGURE 71: Sant' Apollinare, Classe 530 AD (Fleming. 1995:155)

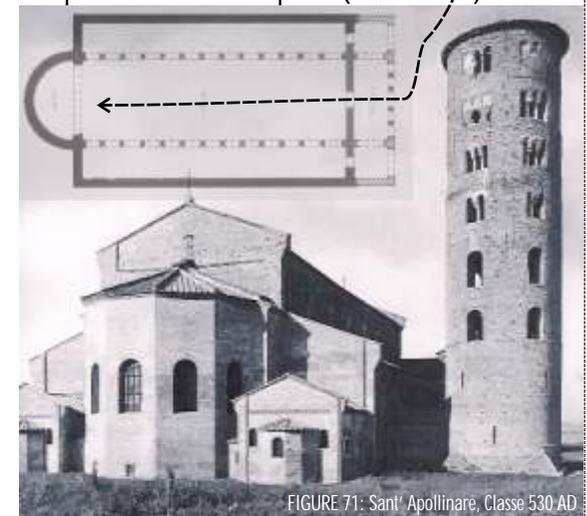


FIGURE 71: Sant' Apollinare, Classe 530 AD

Further comments:

In Basilican Church architecture, the liturgical and congregational space are within the same church space. The clergy and congregation take part in the service. Later in the 5<sup>th</sup> century a division between the clergy and the congregation is established. Basilican Church architecture reveals something of Christianity. The darkness in the side aisles reflects the search and strive for the unseen. It leaves the impression of infinity. There is a bit of mystery in the air. (Koorts. 1974)

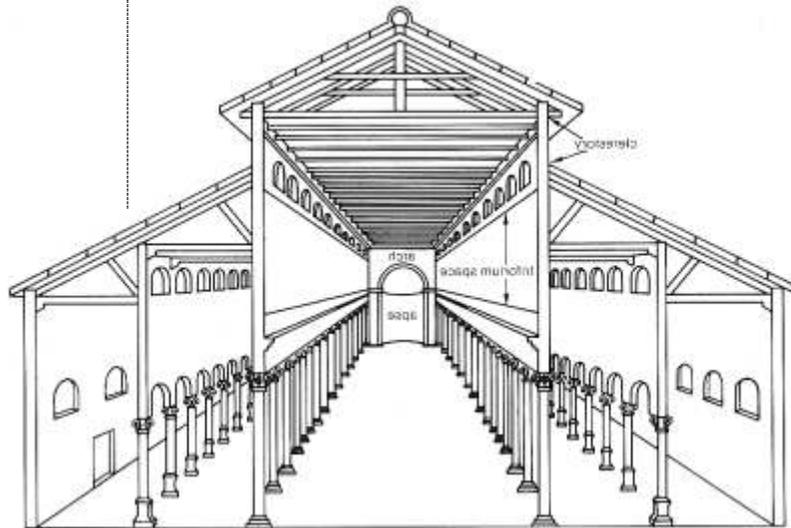


FIGURE 72: Section view of typical Early Roman Christian Basilica.

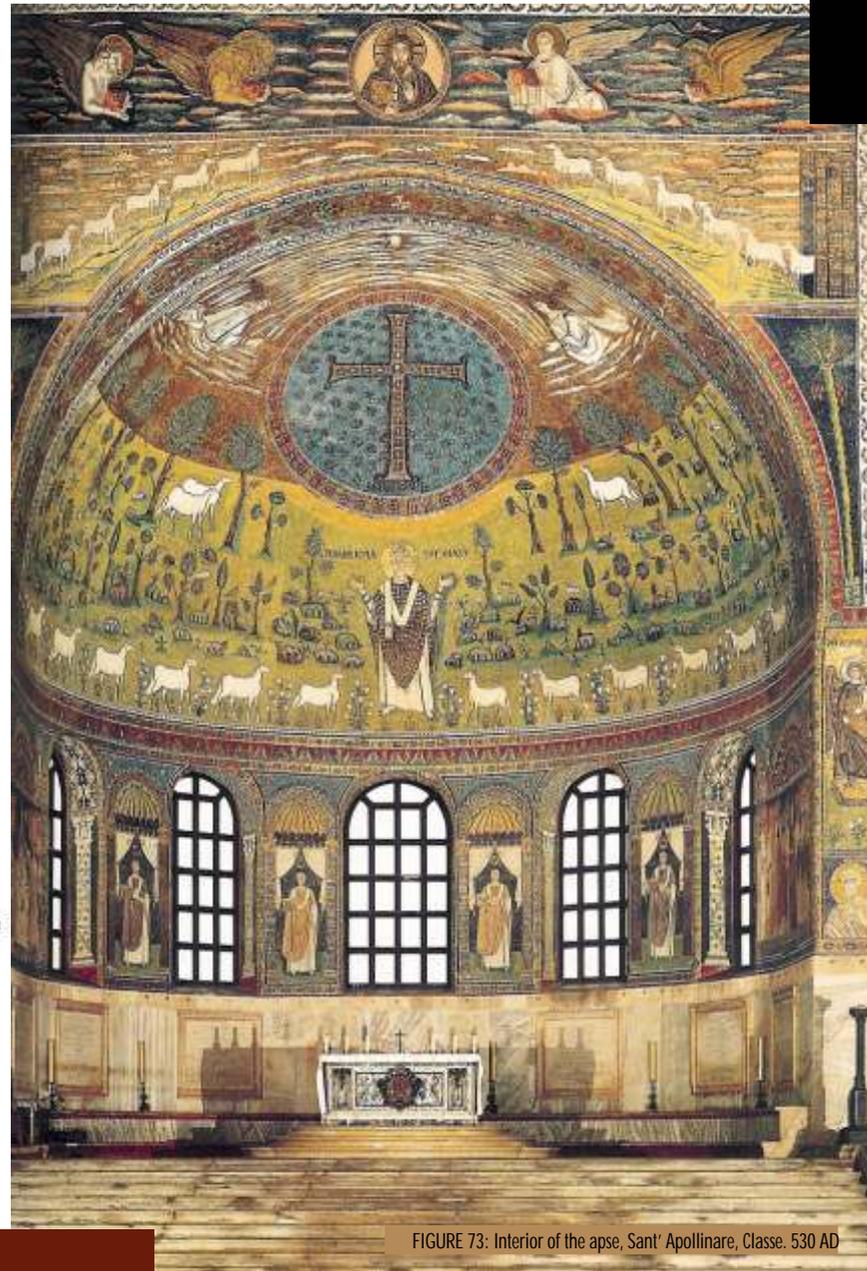


FIGURE 73: Interior of the apse, Sant' Apollinare, Classe. 530 AD

FIGURE 72: Section view of typical Early Roman Christian Basilica. (Fleming. 1995:129)

FIGURE 73: Interior of the apse, Sant' Apollinare, Classe. 530 AD (Fleming. 1995:156)

## Byzantine Church Architecture

### Short introduction:

325 AD - 15th century

When Constantine declares the Christian faith as a state religion in 326 AD, the faith spreads to Byzantine, the new capitol of the Roman Empire (later known as Constantinople). Church buildings are erected for this new faith. The main feature of a Byzantine Church is the centralized plan form. (Koorts. 1974)

### Characteristics:

The plan consists of geometrical figures with a definite midpoint or center. These include the square, hexagon, octagon, circle and Greek cross or a combination of these. There is a big dome in the middle of the central figure, often with secondary domes on the sides. (Koorts. 1974) Although differing quite radical architecturally, Byzantine Churches have all the usual features of a basilica: a narthex entrance, circular nave, surrounding side aisles and a triumphal arch leading into a sanctuary with an apse and two side chambers.

The striking difference between an oblong Basilica and a centralized Church is the direction of the axis. The axis is vertical, leading the eye upward from the central floor space to the dome. (Fleming. 1995)

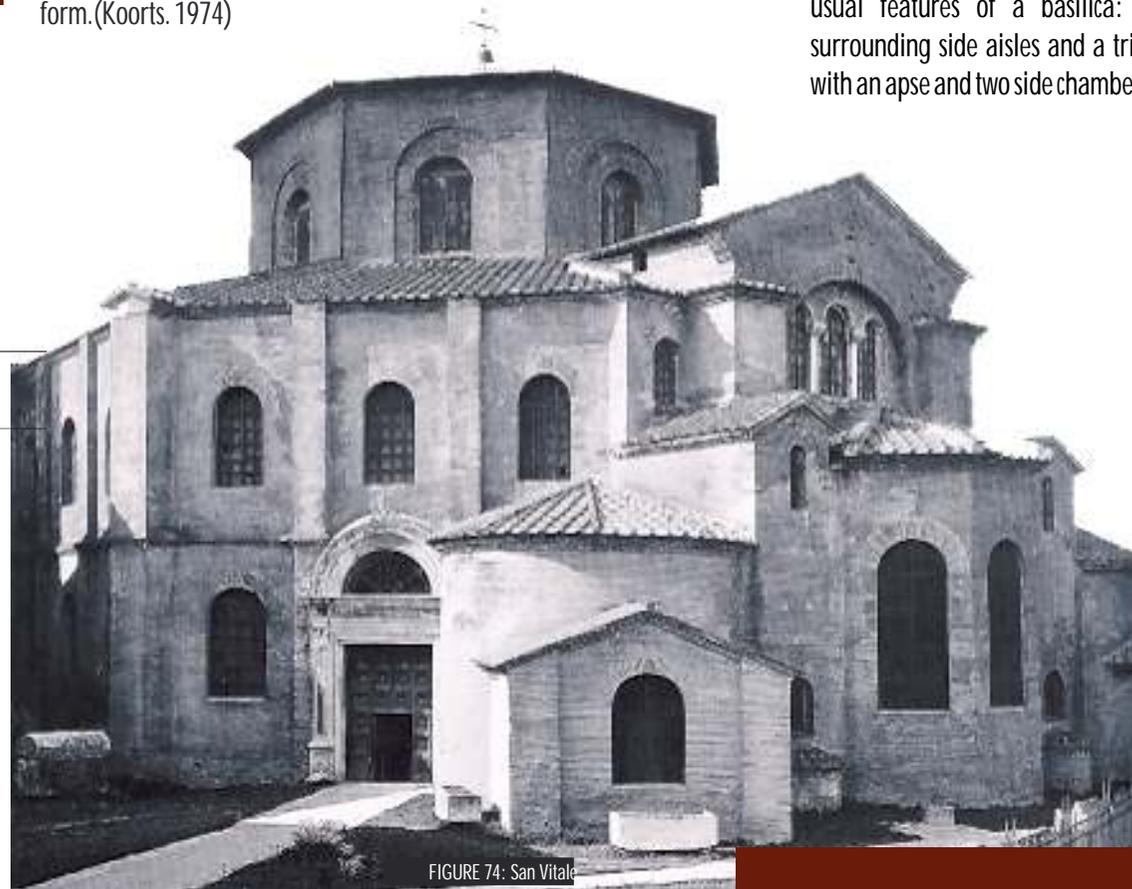


FIGURE 74: San Vitale

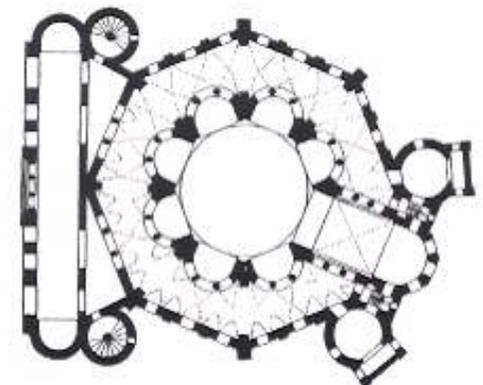


FIGURE 75: Plan of San Vitale, Ravenna. 527 - 547 AD

The experience of the procession:

The interior space is divided into two:

- The dome and
- The space between the core and the outer walls.

With the eye being lead upwards, the dome creates a mystical atmosphere. For the worshipers this is a symbol of heaven.

Further comments:

The Byzantine centralized plan facilitates the division between the congregation and the clergy, making it a clericus church. There is an unnecessary emphasis on the clergy. Contemporary Church architecture questions this.

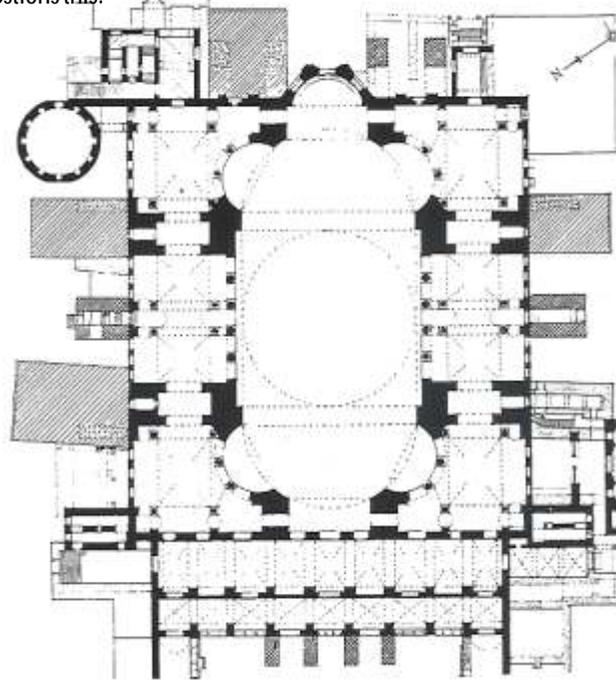


FIGURE 76: Plan of Hagia Sophia. Constantinople. 532 - 537



FIGURE 77: Hagia Sophia exterior.

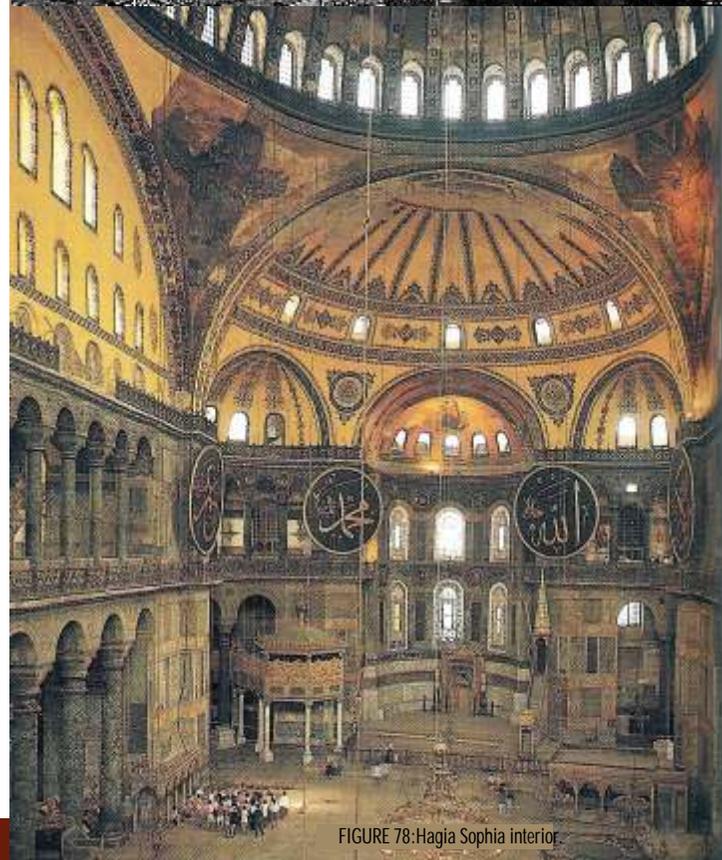


FIGURE 78: Hagia Sophia interior.

## Romanesque Style Church Architecture

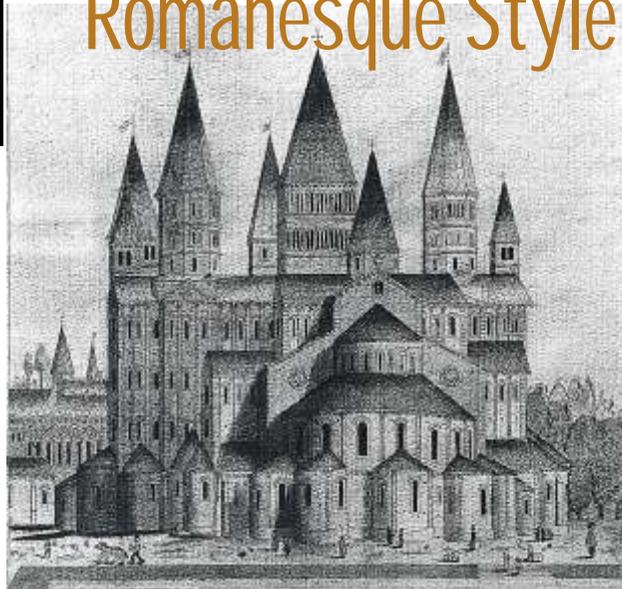


FIGURE 79: Third Abbey Church of Cluny. 1120 AD

### Short introduction:

8<sup>th</sup> - 12th centuries  
 the style develops three centuries after the fall of the Roman Empire. There is a new spirit and creative drive among the western people. There is still a tremendous influence of superstition from the pagan forefathers. There are representations of the spiritual world where half-human and half-animal like spirits exist.

The Church is seen as a secure sanctuary where one is protected and out of reach of these evil spirits and demons. The commoner's approach to God is one of fear and awe. In their frame of reference the grace, blessing and forgiveness had to be earned. But the salvation of the Christian faith is based on God's grace. (Koorts. 1974)

### Examples:

1. Third Abbey Church of Cluny. 1120
2. St Sernin, Toulouse. 1080
3. Paray-le-Monial, Burgundy. 1100 AD

### Characteristics:

In contrast to the simpler earlier Christian Basilicas, Romanesque Abbey Churches show remarkable extensions before and beyond the nave. The three-aisled narthex has grown to the size of a large Church itself; called 'Church of the Pilgrims' or 'Minor Nave'. The narthex serve also as the assembly place for clergy. The spacious five-aisled nave itself allows pilgrims and townspeople to gather for religious services,

While the space beyond expands for the large monastic community. There are now two transepts with chapels, dedicated to various saints. The apse is enlarged to accommodate the huge high altar. An ambulatory is provided for the passage of pilgrims and processions to reach the apsidal chapels. (Fleming. 1995)

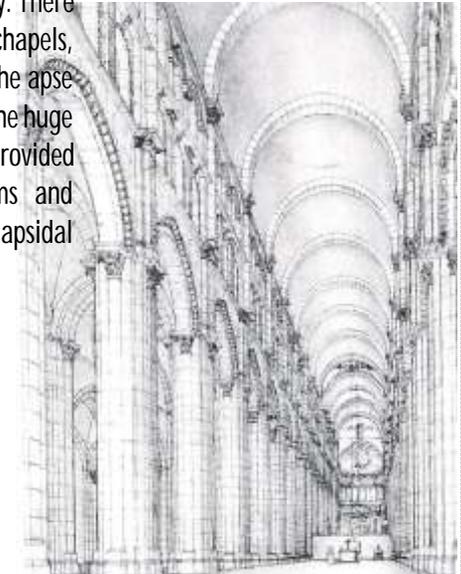


FIGURE 81: Third Abbey Church of Cluny Interior. 1120 AD

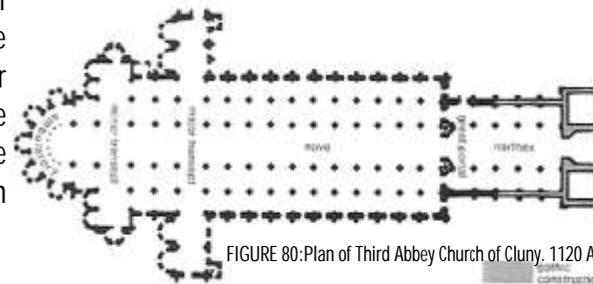


FIGURE 80: Plan of Third Abbey Church of Cluny. 1120 AD

Similar to the early Basilicas there is a strong linear axis from the narthex to the apse. The forward movement is assisted with the rhythm of the columns and double row of windows in the clerestory. The new intervention of the groined vault leads to new possibilities. This enables larger spaces and interesting articulation. The building is orientated such that the apse is on the eastern side and the entrance on the western side. The believer will then be facing east while sitting in Church. This orientation is probably inspired by the expectation that Christ will come out of the East. (Koorts. 1974)

The experience of the procession:  
The worshiper enters the narthex and sees the nave ending in the apse. He/she progresses along the outstretched route with eyes to the front and with the rhythm of the columns facilitating the movement. Then under the transept new spaces are perceived. With a lantern in the middle of the crossing, the lighting effect creates a glimpse of heaven. But this is where the route ends because the choir space is out of bounds. (Koorts. 1974)

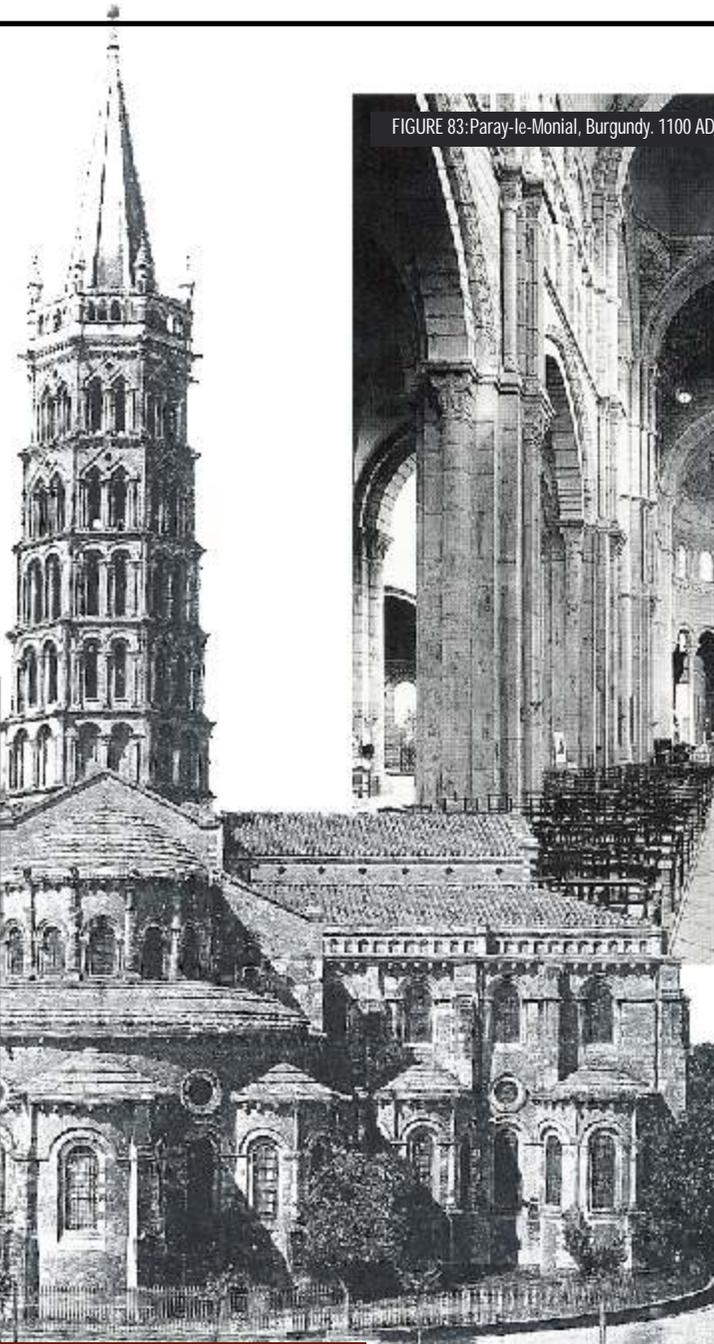


FIGURE 82: St Sernin, Toulouse. 1080 AD



FIGURE 83: Paray-le-Monial, Burgundy. 1100 AD

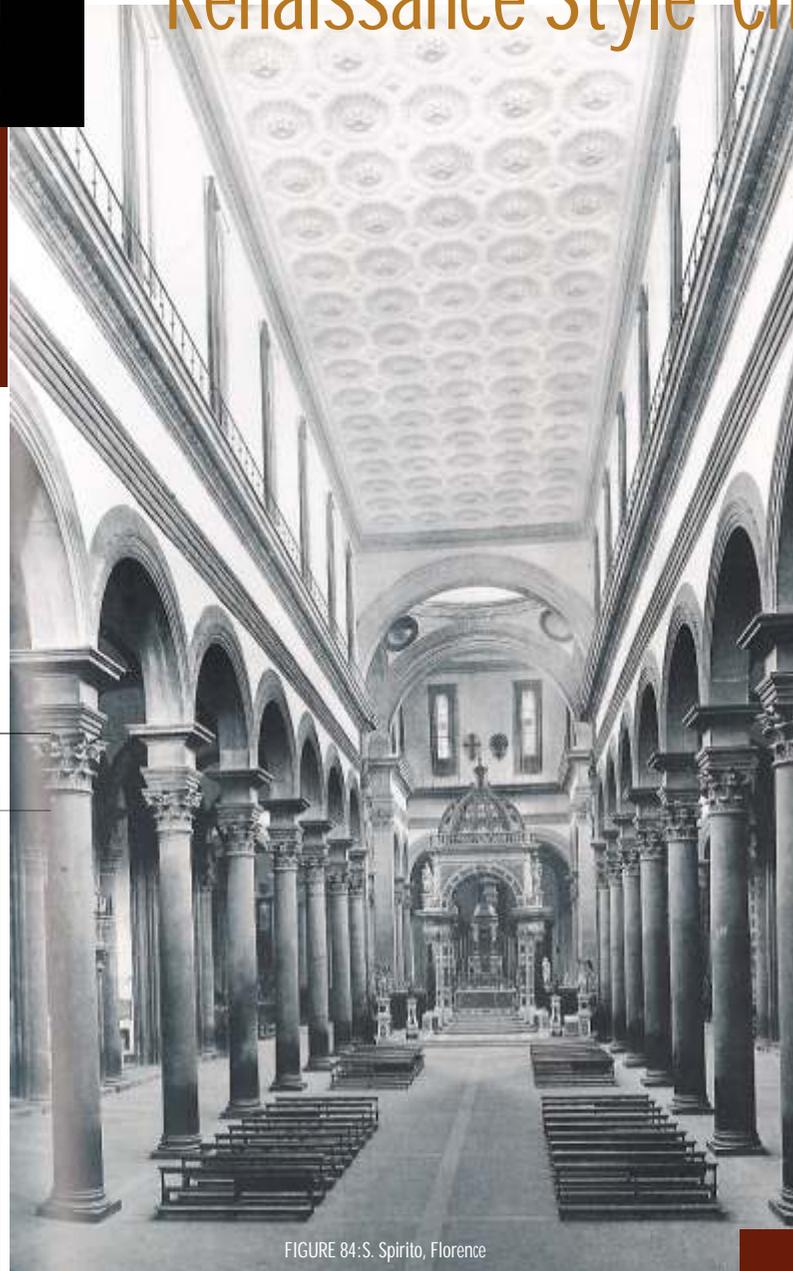
Further comments:

As time progresses there is a tendency of the clergy to become more private and separated from the congregation. This result in bigger chapels for clergy use only and bigger choir spaces. Some churches are enlarged several times on the eastern side. The separation between clergy and members reaches its peak. This is then not a community Church, but a clerical Church. (Koorts. 1974)

FIGURE 82: St Sernin, Toulouse. 1080 AD (Fleming. 1995:167)

FIGURE 83: Paray-le-Monial, Burgundy. 1100 AD (Sutton. 1999:53)

## Renaissance Style Church Architecture



### Short description:

1420-1600

the position of the Church, both as a powerful political force and as an institution increasingly concerned with worldly affairs, came under close scrutiny. Abuses among the clergy in collecting worldly goods set the stage for the Reformation. As did the papal interest in winning victories on the battlefield rather than caring for human souls. Reformers rejected the central authority of the Church and the mediation of the priesthood. They held that by reading the Scriptures individuals could know and interpret the word of God for themselves. (Fleming 1995)

The Renaissance was a period of exploration in many new directions, the advancement of humanistic and scientific knowledge; the discovery of new worlds by navigating the globe; the continued growth of cities, with wealth in the hands of the merchant class and expanding national states; and an unparalleled outburst of productivity in the arts. (Fleming 1995)

How is this reflected in the architecture? We see new concepts, proportions, patterns and elements based on Greek and Roman styles i.e. Doric, Ionic, Tuscan and composite. Architecture is for the luxury and comfort of man. Churches are built not in honour of God but in honour of God and man. (Koorts. 1974)

### Examples:

1. Florence Cathedral. 1296-1887
2. Brunelleschi's S. Spirito, Florence.

**Characteristics:**

The centralized Church is ideal for this era. Many Churches are built in the form of an octagon or Greek cross. Some buildings have an extending arm but the interior remains centralized. (Koorts. 1974)

**The experience of the procession:**

From the center of the Church the person can experience the full effect of the centralized plan. He stands in the focal point as observer; he is the master of the situation. The architecture reflects an undertone emphasizing the present instead of pointing to eternity. The influence of the Reformation is seen in the unity of the liturgical space and the nave. (Koorts. 1974)

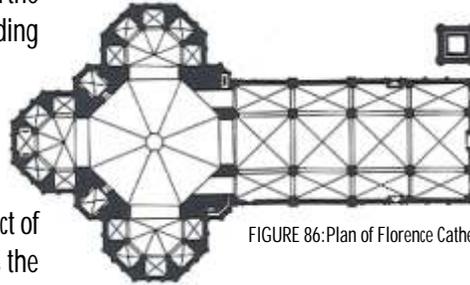


FIGURE 86: Plan of Florence Cathedral



FIGURE 85: S. Spirito, Florence

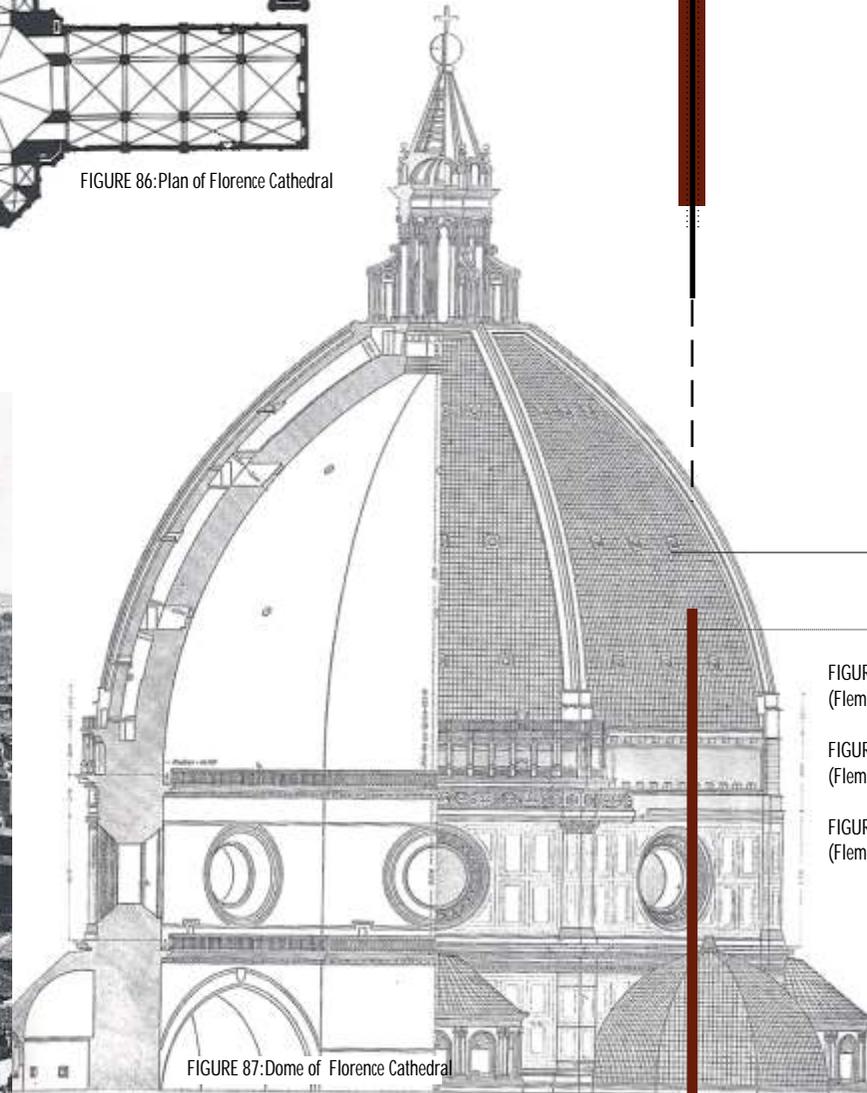


FIGURE 87: Dome of Florence Cathedral

FIGURE 85: S. Spirito, Florence  
(Fleming 1995:256)FIGURE 86: Plan of Florence Cathedral  
(Fleming 1995:256)FIGURE 87: Dome of Florence Cathedral  
(Fleming 1995:256)

## Gothic Church Architecture

### Short description:

1150-1500

This architectural style is a prolongation of Romanesque Church architecture. Although the Gothic Churches reach an architectural culmination, there are elements in the liturgical space planning (also seen in the Roman Churches), unacceptable to the Protestant notion. The 13<sup>th</sup> century is known for the rise of the Pope. The clergy brings great fortune to the Church. The cities compete in raising magnificent structures. All of these contribute to the exalted Churches that appear. (Koorts. 1974)

### Examples:

1. Abbey Church of St. Denis, Paris. 1140-1144
2. Chartres Cathedral. 1194-1260
3. Beauvais Cathedral. 1240
4. Reims. 1211

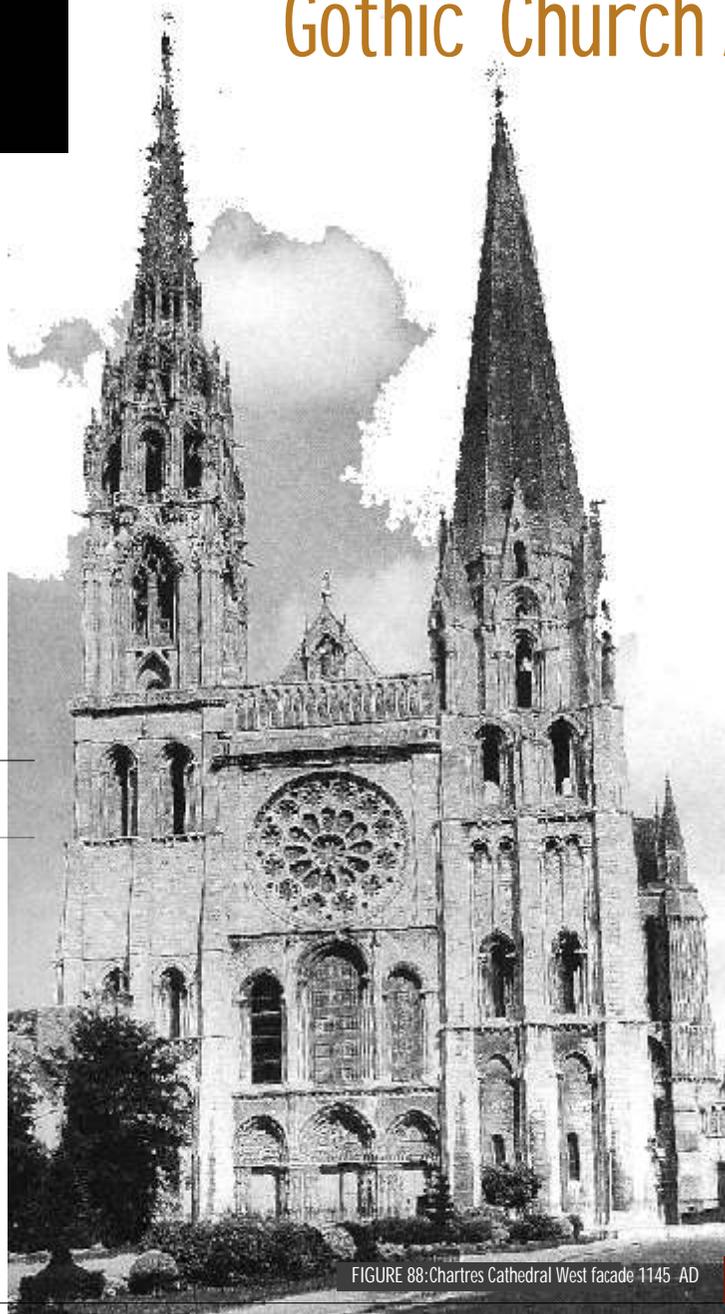


FIGURE 88: Chartres Cathedral West facade 1145 AD

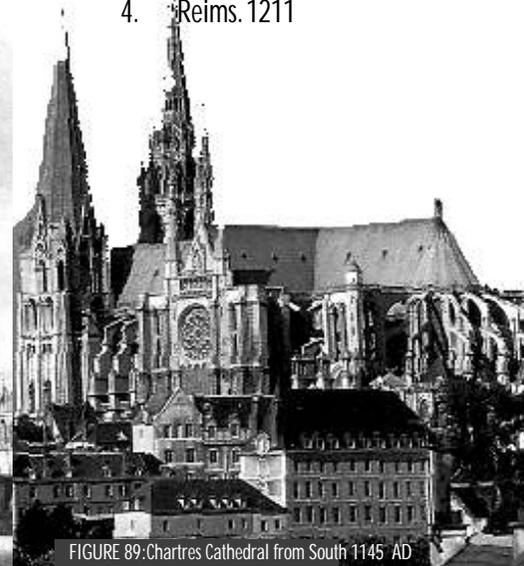


FIGURE 89: Chartres Cathedral from South 1145 AD

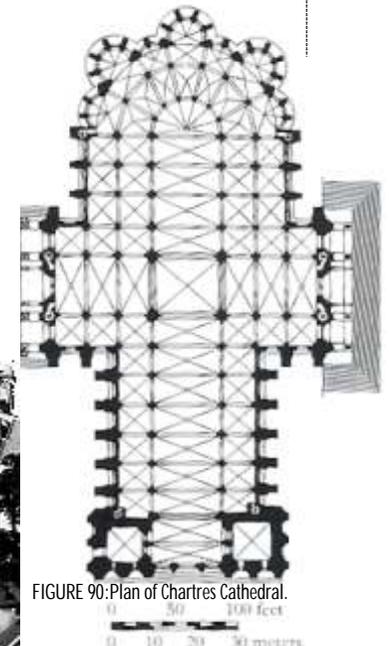


FIGURE 90: Plan of Chartres Cathedral.

FIGURE 88: Chartres Cathedral West facade 1145 AD (Fleming 1995: 203)

FIGURE 89: Chartres Cathedral from South 1145 AD (Fleming 1995: 201)

FIGURE 90: Plan of Chartres Cathedral (Fleming 1995: 203)

Characteristics:

The focus and procession still happen horizontally with an emphasis on the vertical. The Church space is divided into the nave and side aisles. There is still a mystical atmosphere when the light disappears into the darkness of the side aisles. (Koorts. 1974)

The Gothic style Churches have reached an excellent vertical height with its many vertical lines, planes and spaces reaching upwards like music. Beauvais Cathedral has a height of 48 meters, 16 storeys. The pointed arch facilitates these amazing heights. Although new technological development helped these impressive structures, it can not be ignored that this new style was influenced by the spiritual aspirations of the people. The Gothic church contains a mysterious ambience with the seeming infinite space and play of light and dark. The accent is on the vertical element and one's thoughts are directed to heaven. (Koorts. 1974)

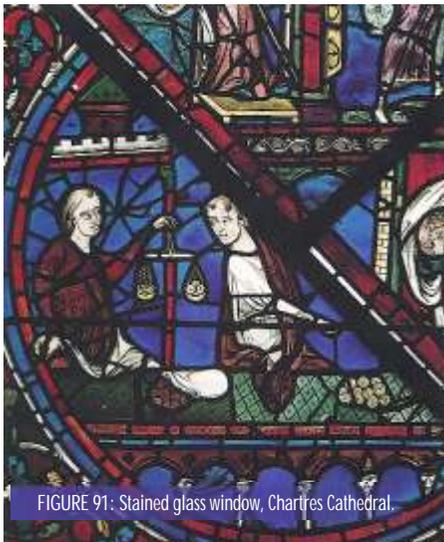


FIGURE 91: Stained glass window, Chartres Cathedral.

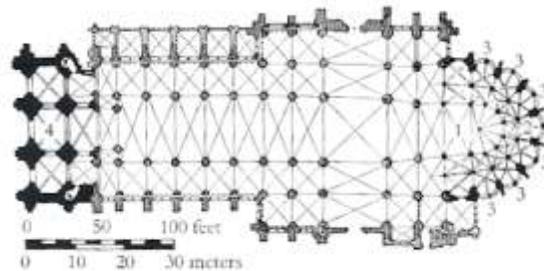


FIGURE 92: Plan of Abbey Church of St. Denis 1140 AD.



FIGURE 93: Reims Interior 1211 AD.

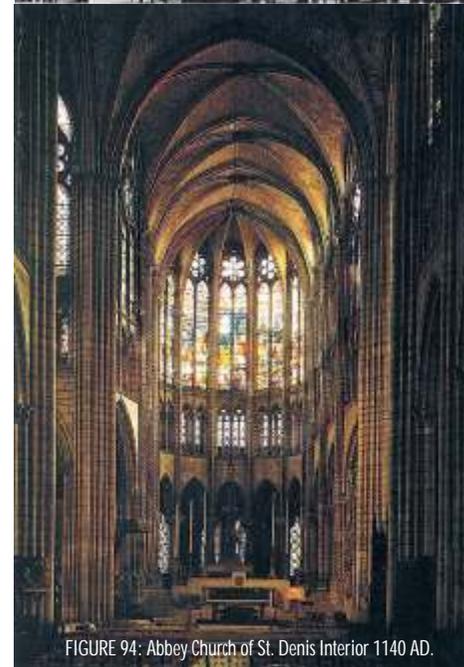


FIGURE 94: Abbey Church of St. Denis Interior 1140 AD.

FIGURE 91: Stained glass window, Chartres Cathedral. (Fleming 1995: 214)

FIGURE 92: Plan of Abbey Church of St. Denis 1140 AD. (Fleming 1995: 200)

FIGURE 93: Reims Interior 1211 AD.

FIGURE 94: Abbey Church of St. Denis 1140 AD. (Fleming 1995: 200)

## Baroque Church Architecture

Short description:

1600-1750

the arts play a major role in religion, in statecraft, and in the enhancement of the good life. The Church rededicates itself to religious work. New orders are founded to carry on missionary work all over the world. The Baroque is the age of reason when minds and imaginations open up new worlds of scientific knowledge as well as artistic creativity. (Fleming, 1995)

Examples:

1. San Carlo alle Quattro Fontane, Rome. 1635-1667
2. Gesu, Rome. 1575-84
3. Vierzehnheiligen, Bavaria. 1743-72

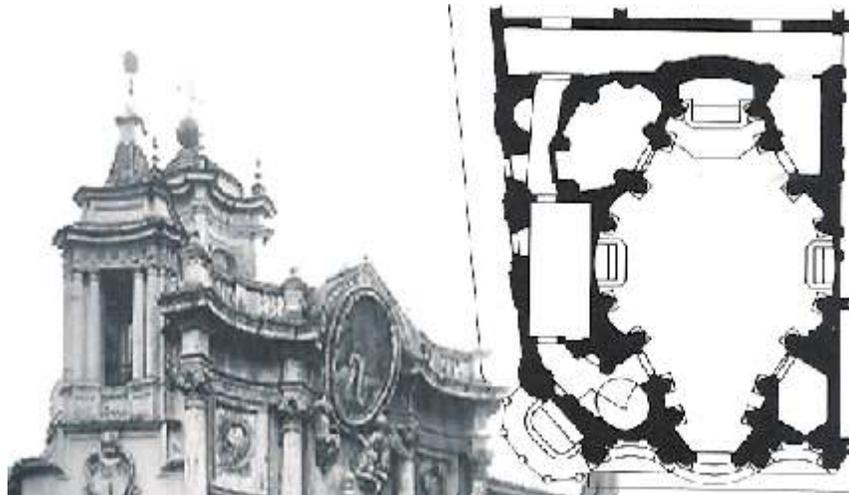


FIGURE 95: Plan of San Carlo, Rome. 1635



FIGURE 96: San Carlo, Rome. 1635

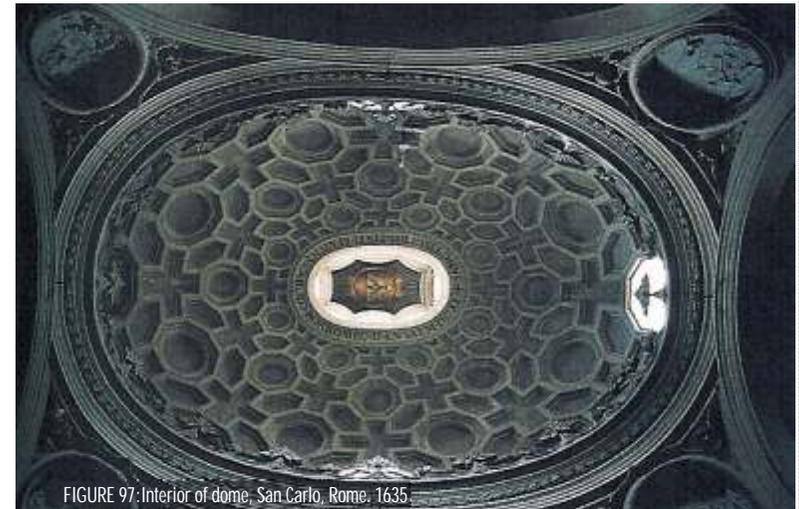


FIGURE 97: Interior of dome, San Carlo, Rome. 1635

Characteristics:

The Baroque Style is also based on historical building styles. Lines are curved and ornamentation applied extensively. The architecture speaks to the emotions through the senses. Art is used to dramatically overwhelm the person. Baroque Church architecture is a reaction of the Catholics against the Protestants. The architecture becomes sculptural and the interior is dynamic and rich in colours and textures. The painted ceilings create the illusion of the heavens opening up where heavenly beings and angels bring praises to God.

The plan form is not limited by any liturgical layout, and develops from the architect's vision of creating that three dimensional space. Sculptural elements take priority above function. Although the architecture is richly decorated and complex, it has definite geometric patterns. Together, everything harmonizes and merges in unity. (Koorts. 1974)



FIGURE 99:Vierzehnheiligen interior, Bavaria. 1743-72

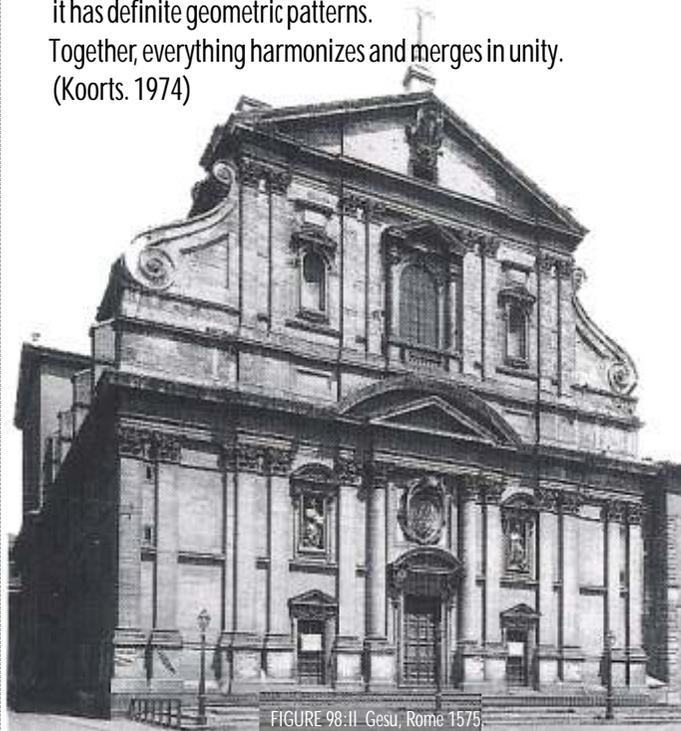


FIGURE 98:II. Gesu, Rome 1575



FIGURE 100:Interior Gesu

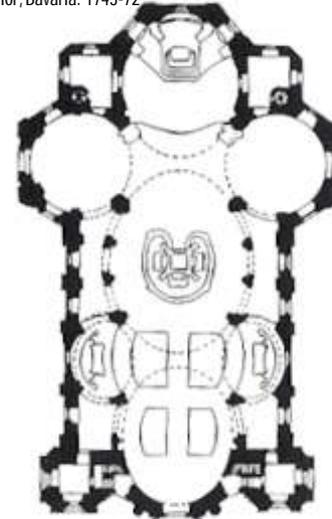


FIGURE 101:Plan Vierzehnheiligen

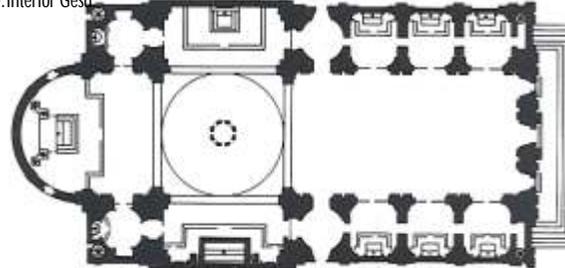


FIGURE 102:Plan Gesu.

FIGURE 98:II Gesu, Rome 1575. (Fleming 1995:380)

FIGURE 99: Vierzehnheiligen interior, Bavaria. 1743-72 (Sutton. 1999:169)

FIGURE 100: Interior Gesu. (Fleming 1995:380)

FIGURE 101: Plan Vierzehnheiligen. (Sutton. 1999:169)

FIGURE 102: Plan Gesu. (Fleming 1995:380)

## A Contemporary view

My interview with Architect Karel Swanepoel turned out to be of great importance and enlightenment. Ten years ago he designed the church building currently used by Moreleta NG Congregation.

I asked him to tell me about his approach towards church design and current view concerning this topic. This is the content of what he said.

“When I, part of a team, was asked to design this new auditorium and accompanying facilities for Moreletapark I looked at what has been done and where church architecture is moving to. In the past great emphasis was placed on the traditional way of Protestant Church Design. There was a specific defined form with the tower on the outside, and the congregational and spiritual leader spaces on the interior. The spiritual leader received word from God and communicated that message to the congregation during Sunday services. The Pastor, Elder or Deacon is raised above the rest of the congregation creating a visual separation. Refer to Figure 103: Model A. The spiritual leader is much more important than the individuals. The use of natural materials and symbolism in materials and architectural elements are crucial. Apart from the sometimes-successful aesthetics of these church buildings, the acoustics inside are not acceptable due to its layout and form. This type of church I call a 'Sunday-church'.

People realized that this is not the ideal situation and that the Spiritual Leader is not more important than the individual forming part of the congregation. Therefore the design changed to a stage where many people can take part in the preaching of the Gospel in the form of speech, music and dancing. But still the congregational space is impersonal; individuals can still feel lost and unimportant in the masses. There is still a problem with acoustics and proper sight lines to the stage. This is an improvement since individuals from the congregation can also have word from God and share with the rest of the Church.

Refer to Figure 104: Model B.

A paradigm shift came when Christians realized that the emphasis should no longer be on the actual building, but what happens on the inside. The well being of the congregation is much more important than the aesthetic appeal of the building. The traditional form made way for a modern, commercialized type Church building. This mind set creates architecture that is human-friendly and will encourage non-Christians to explore the possibilities inside. The traditional type of Church architecture could create an image of resistance to non-Christians. The form that came as a result of this breakthrough in church design is illustrated in Figure 105: Model C.

FIGURE 103: Model A. The Sunday Church. (Swanepoel, 2003)

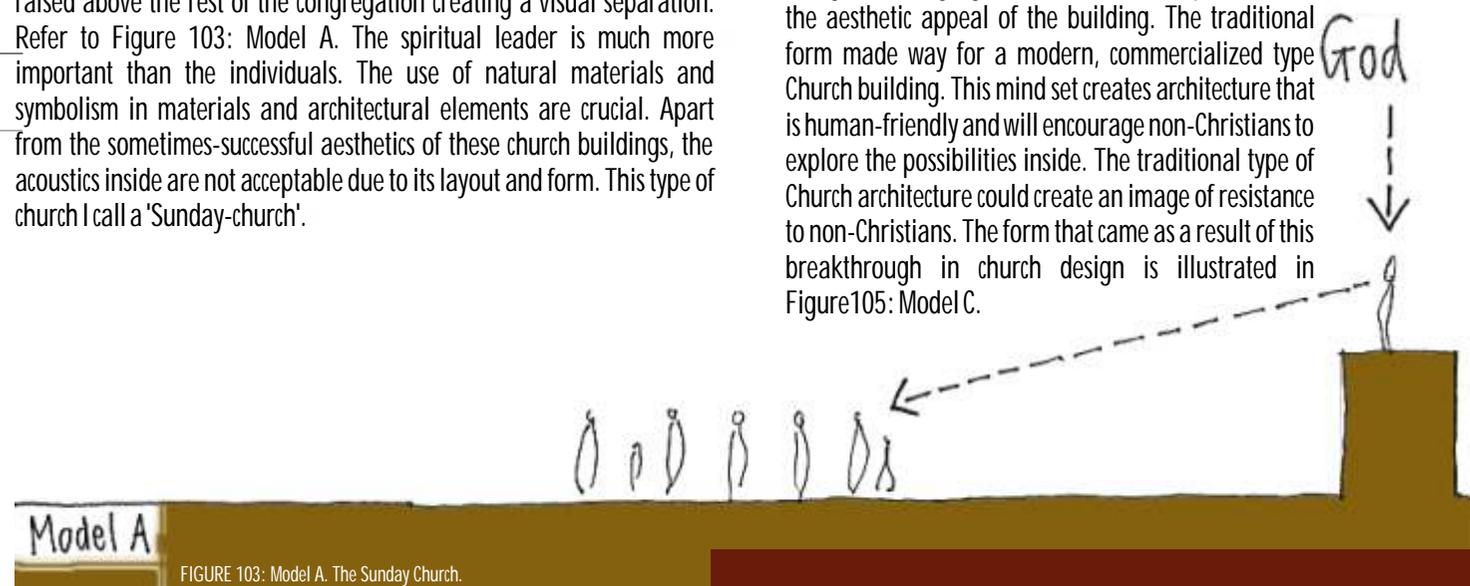


FIGURE 103: Model A. The Sunday Church.

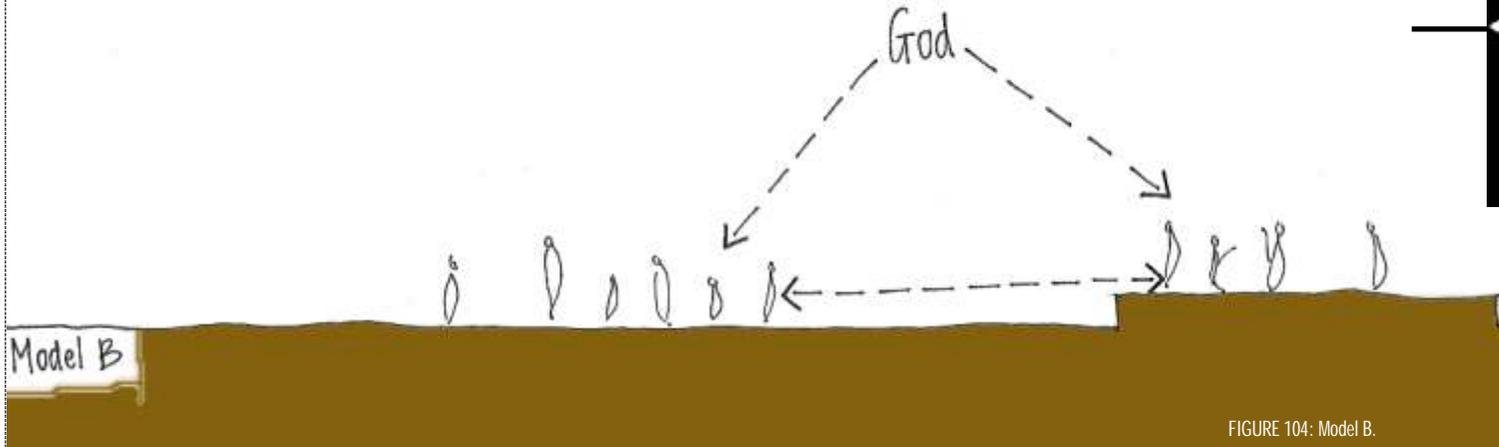


FIGURE 104: Model B.

The church consists of a stage for multiple uses and many people participating and a stepped congregational space. This design is a huge improvement in terms of acoustics and sight. It also creates the feeling for the individual that he/she is important and in contact with the stage. This layout also complements what the Bible says about Christianity and is then more sensitive to Biblical teaching than the old traditional form. Materials do not necessarily have to be natural. God is the giver of creativity and intelligence and therefore responsible for the advancing technologies. Symbolism is less important than the gathering of believers. It has taken some time for people to adjust to this new way of thinking.

Today, referring to Moreleta NG church, the people are wanting to move beyond this point. They are ready to go back to symbolism and have the desire to have God and His glory displayed in the Church architecture. This does not mean to recede back to the problems of traditional design, but to reinstate the encounter with God. The architecture should work inside out. The essence of the faith and the congregation should determine the design. There is a desire to be reminded of Biblical truths and principles through symbolism. People want to experience God." (Swanepoel, 2003)

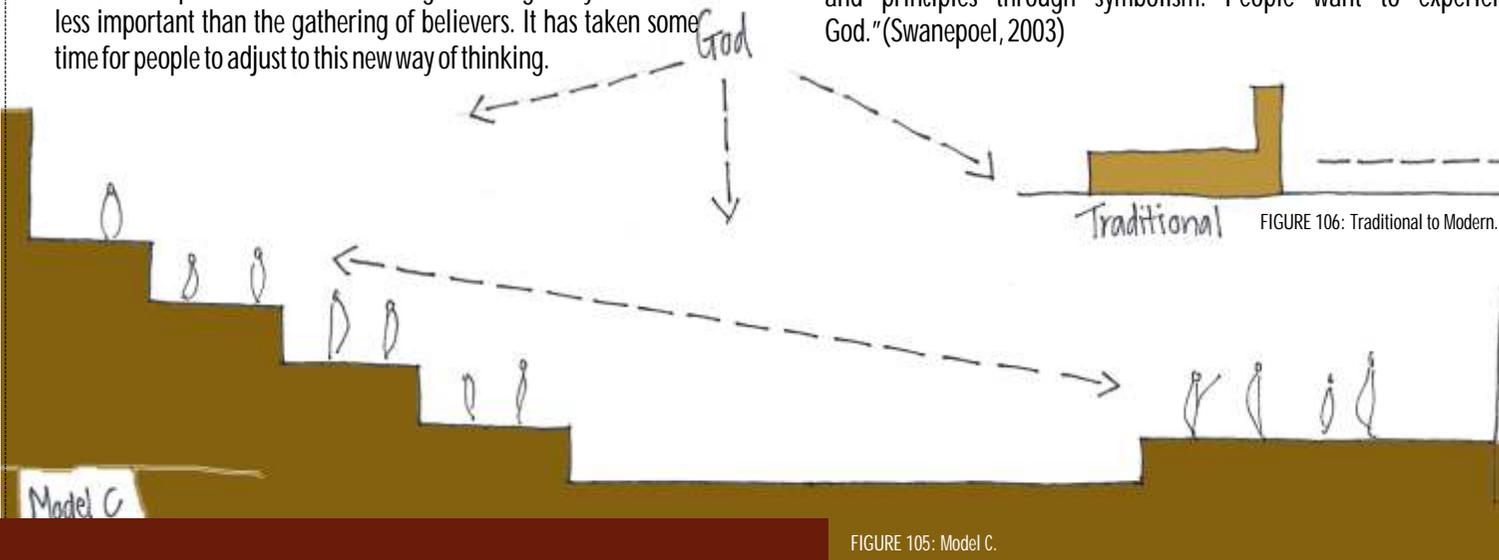


FIGURE 105: Model C.

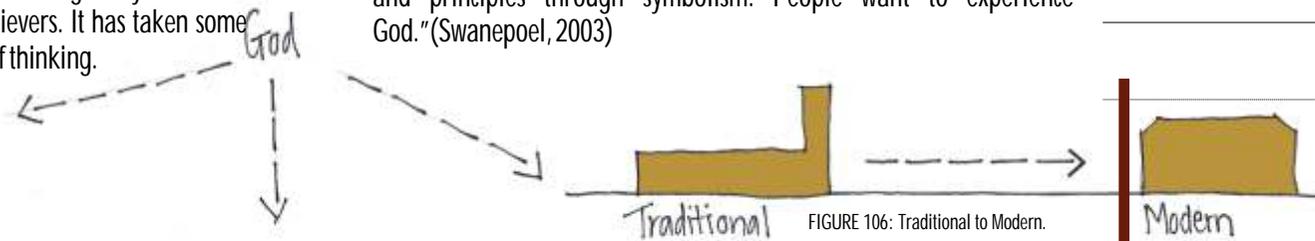


FIGURE 106: Traditional to Modern.

FIGURE 104: Model B. (Swanepoel, 2003)

FIGURE 105: Model C. (Swanepoel, 2003)

FIGURE 106: Traditional to Modern. (Swanepoel, 2003)

# Client Profile

Index of this chapter.

Story of Moreleta.

Moreleta Today.

A closer look at the Congregation.

Vision for the New Development.

The Project.

# Client Profile

# Client Profile

## Story of Moreleta

Vision: Ezekiel 47:1

“The man brought me back to the entrance of the Temple. And I saw water coming out from under the threshold of the Temple toward the east (for the temple faced east).” (NIV. 1985:1294)

Moreleta sees the throne of God and a Temple, a congregation kneeling in prayer before the King, a congregation living in the presence of God and making Him King on earth. (Moreletapark NG Church. 2002.)

The story of Moreleta:

In 1985 Moreleta NG Church is born with 1 200 members dividing from Pretoria Oosterlig Church. Without a proper church building they gather in a school hall. Between 1986 and 2002 various pastors are taken in. In 1992 a site is bought and the current church building erected. The number of members increased from 3 400 in 1992 to 12 000 in 2002. On the same site a pre-primary and nursery school, youth center, prayer chapel and administration block are built. In September 1998 there is discussion around a possible new larger development. During August 2001 God shows Moreleta to become a Mega Congregation rather than to divide. (Rabie. 2003a) The Church has grown far beyond its present-day capacity and expansion is the next step. (Rabie. 2002)

Moreleta today:

The Moreleta NG Church in Pretoria East has a rapid growing congregation with a current 12 000 church members. (Rabie. 2003b.) The present facility was developed in a few phases, but has reached its limit concerning further development. The current 3ha site is utilized to its fullest potential. (Bartie. 2003.)

The auditorium was designed and built 10 years ago by architect Karel Swanepoel. There are a number of different facilities on the site in Rubenstein Avenue Pretoria East. These include:

- The auditorium with 1500 seats, four entrances and foyer space with notice boards. Within the auditorium there are a few mother's rooms, a translation room, sound and lighting studio, stage with backstage rooms, a basement below the stage, various storage rooms and ablution facilities.
- The structure attached to the auditorium includes rooms for cell meetings, counseling, therapy and more ablution and storage facilities.
- There is a big hall especially for youth gatherings. It is used as a social area for the youth and for accommodating the overspill of members from the auditorium on Sundays. It can be used for any kind of meeting.
- The administration block houses all the managing staff with offices, conference facilities, a recording studio, small kitchens and ablution facilities. The recording studio is also used for training and lectures.

FIGURE 107: Time Line of Moreleta. (Rabie. 2003b)

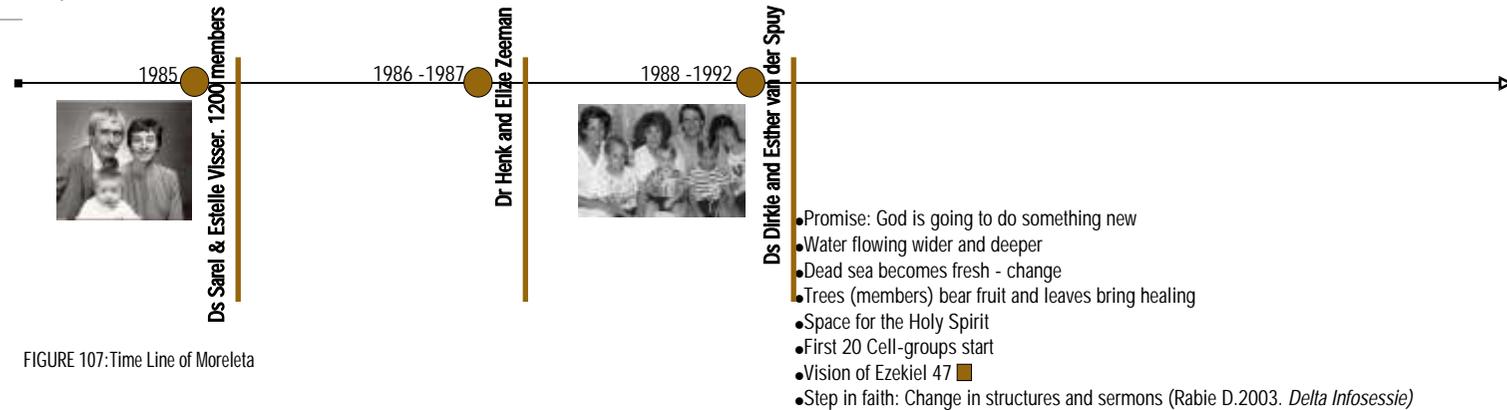


FIGURE 107: Time Line of Moreleta

# Client Profile

- From the foyer there is a kitchen and a Christian bookstore with more storage and ablution rooms.
- Apart from the auditorium, there is a pre-school for babies and children up to 6 years. These rooms are additionally used for children evangelism.
- Next to the auditorium one finds a small prayer chapel open 24 hours for people wanting to pray.
- A store for food offerings to the unemployed and homeless.
- Therest of the site is occupied with parking and circulation. (Interview with Diana Rabie, 16 January 2003.)

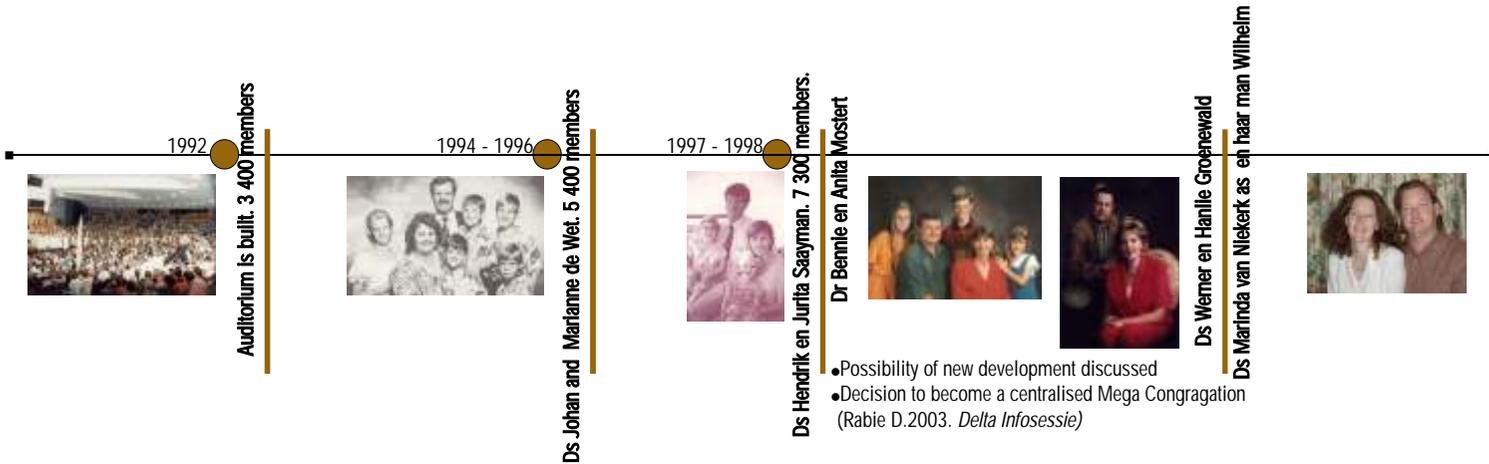
The existing auditorium has 1500 seats. To accommodate its 12 000 members, 6 services are necessary on a Sunday. This is certainly not the ideal condition. One morning service would be favored by everyone to share in the gifts of the Holy Spirit. These include prophecies, witnessing, videos, drama, choir and dancing. The parking problem is worsened when the one service runs a bit late and people to attend the next service, arrive when the others haven't left yet. This causes people to turn around and go home, rather than to face the difficulties of finding a parking space, not to mention finding a seat once inside the church. Furthermore there is enormous pressure on members contributing to the service in the form of music, sound and video recordings. (Rabie D. Information. 2002)

With the completion of the new development, the facilities in Rubenstein Avenue will still be used. It will accommodate English, African languages, and Youth services. It will serve as a training station for evangelists and youth workers, therapy and counseling. It will remain the main campus until the new project is entirely completed.

■ Vision: Revelation 22:1

"Then the angel showed me the river of the water of life, as clear as crystal, flowing from the throne of God and of the Lamb down the middle of the great street of the city..."  
(NIV. 1985:1950)

Moreleta sees a Lamb and an altar, a congregation where the cross remains the center of everything and where spreading the gospel continues to be the most important action.  
(Moreletapark NG Church. 2002.)



# Client Profile

■ Vision: Revelation 22:1 b

"...On each side of the river stood the tree of life, bearing twelve crops of fruit, yielding its fruit every month. And the leaves of the tree are for the healing of the nations."  
(NIV. 1985:1950)

Moreleta sees water flowing from the throne and the Temple, a congregation filled with the Holy Spirit and through His power and gifts they have great influence on the church and the world.

(Moreletapark NG Church. 2002.)



FIGURE 108: Administration Building.



FIGURE 109: Exterior of the Church building.

76

FIGURE 108: Administration Building. (Steyn, 2003b)

FIGURE 109: Exterior of the Church building. (Steyn, 2003b)

FIGURE 110: One of the entrances to the Auditorium. (Steyn, 2003b)

FIGURE 111: Foyer space to the Auditorium. (Steyn, 2003b)



FIGURE 110: One of the entrances to the Auditorium.

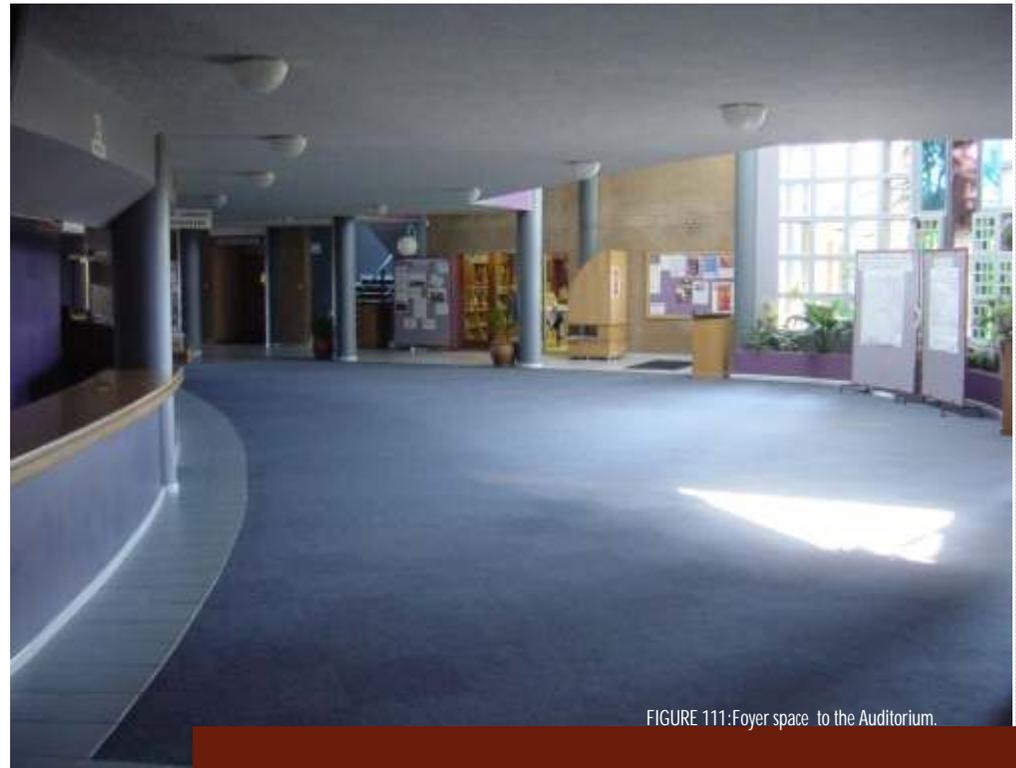


FIGURE 111: Foyer space to the Auditorium.

# Client Profile



FIGURE 112: Hall.



FIGURE 113: Cross inside Chapel.



FIGURES 114-115: Stained glass windows inside Chapel.



FIGURE 116: Outside parking.



FIGURE 117: The Chapel.

Vision: Ezekiel 47: 9, 12

"Swarms of living creatures will live wherever the river flows. There will be large numbers of fish, because this water flows there and makes salt water fresh: so where the river flows everything will live. Fruit trees of all kinds will grow on both banks of the river. Their leaves will not wither, nor will their fruit fail. Every month they will bear, because the water from the sanctuary flows to them. Their fruit will serve for food and their leaves for healing." (NIV. 1985:1294)

Moreleta sees a living congregation with abundant life. They dream of wonders when God does new things.  
(Moreletapark NG Church. 2002.)

FIGURE 112: Hall. (Steyn, 2003b)

FIGURE 113: Cross inside Chapel. (Steyn, 2003b)

FIGURES 114-115: Stained glass windows inside Chapel. (Steyn, 2003b)

FIGURE 116: Outside parking. (Steyn, 2003b)

FIGURE 117: The Chapel. (Steyn, 2003b)

# Client Profile

Vision: Ezekiel 47: 3-5

“As the man went eastward with a measuring line in his hand, he measured off another thousand cubits and then led me through water that was ankle deep...then led me through water that was knee deep..then water that was up to the waist. He measured off another thousand, but now it was a river that I could not cross..the water was deep enough to swim in - a river that no one could cross.

(Barker K. 1985:1294)

Moreleta sees water that goes deeper, a congregation building one another in spirit and serving one another until spiritual maturity is reached.

(Moreletapark NG Church. 2002.)



Plan of the Auditorium.



FIGURE 118: Stage inside Auditorium.



FIGURE 119: Sound and lighting studio of Auditorium.

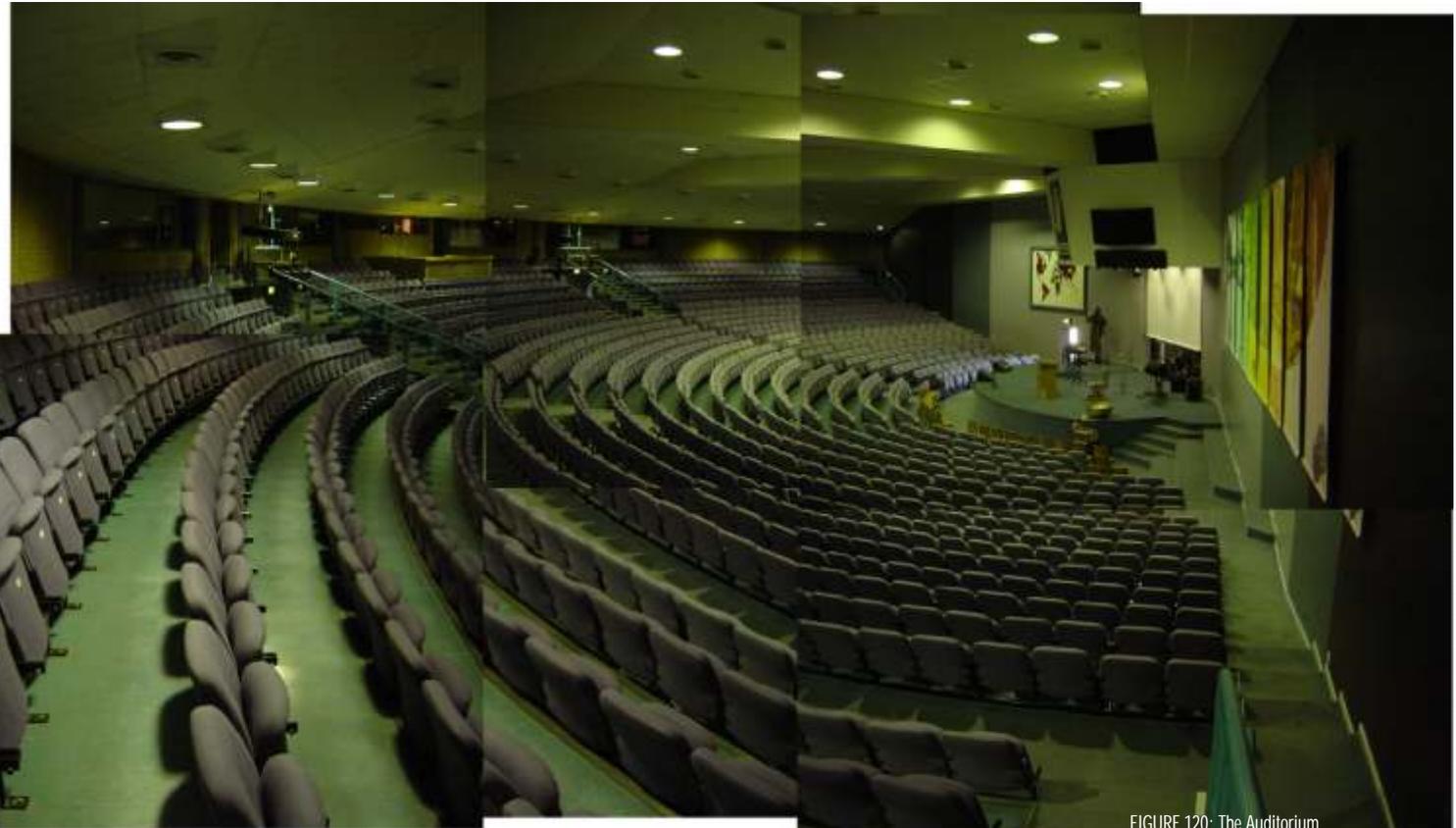


FIGURE 120: The Auditorium.

78

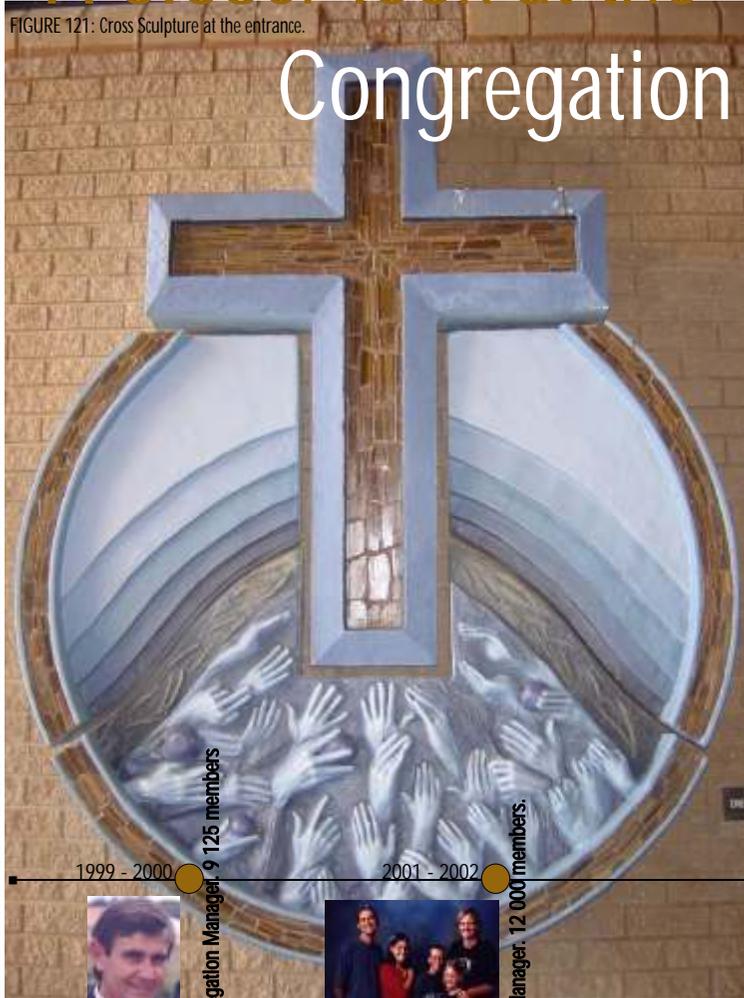
FIGURE 118: Stage inside Auditorium. (Steyn, 2003b)

FIGURE 119: Sound and lighting studio of Auditorium. (Steyn, 2003b)

FIGURE 120: The Auditorium. (Steyn, 2003b)

# A closer look at the Congregation

FIGURE 121: Cross Sculpture at the entrance.



## Strategic Servant-hood model:

Moreleta is a community church from a reformed tradition functioning on the principle of centralization with one Vision and set of Core Values. These Core Values are embedded in the congregation's mission and include the following key words:

- Saved
- Witness
- Obedient
- Go out
- Groups
- Spiritual gifts
- Grace
- Growth
- Prayer
- Give

The church wants to create a spiritual home with centralized service administration, and a variety of services that build church members and spread to other churches.

The church supports church-sowing-actions and is optimally active in opportunities given by God. The church is willing to cooperate with other churches with the same vision and core values to overcome boundaries and enlarge the Kingdom of God. Moreleta desires to reach out to other churches and communities in need. Moreletapark is thus a catalyst for the spreading of the 'Good News' and God's Kingdom through their services and teaching.

# Client Profile

## Vision

Moreleta sees water flowing further and further, a congregation reaching more and more people like a river attracting people. They dream of a congregation reaching to dry places and spreading the new life further and further.

They see a congregation with a high standard of holiness where sin is not accepted and where the lives of the leaders and members speak of truth.

(Moreletapark NG Church. 2002.)

FIGURE 121: Cross Sculpture at the entrance. (Steyn, 2003b)

1999 - 2000



Derrick Bartle becomes Congregation Manager. 9 125 members

2001 - 2002



Dr Johan Smith start as Youth Manager. 12 000 members.

- God asks a step in faith
- August 2001: Church council confirms a Centralized Mega congregation. (Rabie, 2003.)

The new Church building with 20 000 - 30 000 members.



# Client Profile

Moreleta is a community-network-church. To fulfill God's plan they envision to:

- Create Church members that are spiritually mature and actively reaching out to others with the love of God. Members supporting other people in physical and spiritual need. Members that are like a bubbling fountain with living water. Members that love the Lord and serve Him with their spiritual gifts, talents and finances.
- Build a congregation that cares for one another; is willing to couple with other churches to enlarge God's Kingdom and is willing to support other congregations.
- Create a support network to attract people like a magnet. To form an oasis of teaching, equipping and healing (Ezekiel 47). To create an environment of spiritual peace and to live by the living God for all to see and experience. To see God doing wonders and help people to change themselves and their world for the better. Within this support network the people should pray for each other and for the rest of the world. (Moreletapark NG Church. 2002.b)

There are currently certain elements preventing the full implementation of God's plan:

1. Moreletapark NG Church experiences a shortage in required facilities, equipment and teaching facilities. This results in stagnation.
2. A large number of the church members are not spiritually prepared or dedicated enough to become active church members.
3. Church members offering help are not necessarily contacted.
4. There exists a low level of servant-hood.
5. Communication concerning the vision of the Church is ineffective.
6. An apparent resistance against the new development of a Mega-congregation is experienced. (Moreletapark NG Church .2002.b)

#### Service Attendance:

A large percentage of the members come from outside the Church boundaries. And many of the people present during the morning and evening services are visitors. The services serve as advertisement for the church and the congregational space must provide seating for the church members as well as the visitors.

A study on the average number of people attending the morning and evening services respectively has been done. It shows that when a service is 80% full, it has technically reached its maximum capacity. People are usually not very eager to look for the remaining 20% seating between 1500 seats. (Moreletapark NG Church. 2002.b)

#### Changing Social Patterns:

The distance traveled between home and Church is not a threat with the good infrastructure in Pretoria. But the financial abilities of members are changing. Statistics show that the income of the church does not grow proportionately with the growth in members. The graph representing the growth in members is much steeper than the growth in income. Then it is vital to realize that present-day Church planning should be up to date with contemporary trends and technology. Today's youth has rapidly changing needs and desires with an increasing tendency in the world to build action and advertising around the youth. Concepts and thoughts concerning the Church as an institution and church are developing. There is also an increasing freedom to move between church boundaries and different congregations. (Moreletapark NG Church. 2002.b)

FIGURE 122: Logo of Moreleta



The Logo symbolizes the Vision.

The cross on Calvary:

The cross is central as symbol of the salvation and new life through Jesus Christ.

The white Dove:

It symbolizes the Holy Spirit who came to renew our lives like water turns a desert into a green garden.

The Living Water:

This is illustrated in blue, white and green: where the water flows there is healing, growth and new life!

The purple background:

This shows the kingly presence of God.  
(Moreletapark NG Church. 2002.)

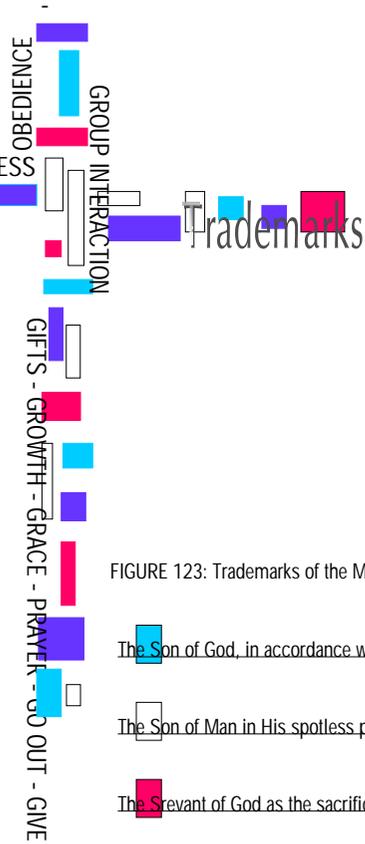


FIGURE 123: Trademarks of the Moreleta NG Church

The Son of God, in accordance with His Heavenly being and origin

The Son of Man in His spotless purity and sinlessness

The Servant of God as the sacrificial Lamb, His suffering and His glory as the Messiah

The King of Kings and Lord of Lords, the Prince of the kings of earth

(Kiene. 1977:28)

The Vision for the new development:

The congregation boundaries are unlimited. The Spirit of God moves over human-made boundaries of communities, cities, races and countries. Moreletapark NG Church can act as an instrument in the hand of God to have an influence in and outside boundaries. It is therefore crucial to accommodate this dream of servanthood and revival in the mental thinking and processes of management.

God's plan for Moreleta is that the deeper flowing Spiritual water flows wider to reach more people with the love of Christ and through this, have tremendous impact and people won for Christ.

FIGURE 122: Logo of Moreleta. (Rabie , 2003c)

FIGURE 123: Trademarks of the Moreleta NG Church. (Rabie , 2003c)

# The Project

The new Development:  
The Preachers and church leaders have, through prayer and fasting, asked the Lord's guidance in the possibility of extending the congregation. This new development will involve the identification and purchase of a new site to erect more and bigger facilities. The church has made some decisions concerning the development:

1. The congregation will not divide, but will be allowed to continue growth and expansion. It will exist as a Mega Congregation.
2. With a R5, 5 million budge, an 18ha site is required.
3. The church building or service space will be the first priority in the new development. (Rabie, 2002)

If the congregation has 20 000 - 30 000 members, an auditorium with 8 000 - 10 000 seats will be required working with a 40% attendance. Other than the auditorium, the first phase will include a kitchen, Christian Bookstore and a facility for pre-school children (Pienkvoetbedienning). (Rabie, 2002)

Other possible features to be added during later stages include:

- Therapy Center
- Pre school
- Christian School
- Bible school
- Retirement Complex
- Clinic
- Coffee shop/Tee garden
- Prayer garden
- Hiking route
- Memorial wall
- Play park
- Chapel
- Picnic site (Rabie, 2003c)

For the Purpose of this Academic project the first phase of development will include architectural features that could immediately be used. The following have been identified as the aim and object of this academic scheme:

- The Auditorium
- The Kitchen
- The Bookstore
- The Pre-school Children's Facility
- Chapel
- Memorial Wall
- A Prayer Garden with Biblical plants

The remaining suggested features for future development will be looked at in concept, in terms of site development and not in terms of detail design. To include all the features into this academic project will extend way beyond the scope of what is academically expected.

The Brief for this academic project consists this whole document. The existence of a realistic client with real needs and desires are indeed very fortunate. It will be the object of this project to develop and design these chosen features as if for this client.

In the following pages a study has been done on the chosen Site, the User and the Interested and Affected Parties. Relevant Precedent Studies were looked at as well as an overview on Designing Churches. The final part of this document comprises the Accommodation Schedule and information on Biblical Plants.

Designing a Church building is not merely another design task, but a calling. A thorough understanding of all the covered topics in this document is vital to succeed.



# Context Study







FIGURE 126: Aerial Photograph of the bigger area surrounding the site.

## The Site

The site is situated in Pretoria, South Africa. It forms part of the last Greenfield site in the East of Pretoria. Hence this site is greatly sought after by the surrounding developers. Initially this area was zoned for agricultural use, but with the present demand for housing, the zoning has been changed to residential. This area of Pretoria is mostly taken up by the residences of the higher income class people. There is a concern that low density housing will be built, thus decreasing the value of the luxury estates.

The chosen site for the new Church development consists of 18 ha. There is a slope across the site.

Physical characteristics of the site:

### 1. Geology

According to the report of ARQ Engineers completed on request by Woodlands Lifestyle Estate, the area is underlain by shale with local siltstone of the Daspoort Stage, Pretoria Series, Transvaal System. (ARQ Specialist Engineers, 2000)

### 2. Temperatures

January temperatures 20 to 30 °C  
 July temperatures 10 to 15 °C

### 3. Rainfall

Summer 125 to 375mm  
 Winter 62 to 250 mm

### 4. Prevailing winds

N-E in summer and N-E to N-W in winter

### 5. Relative Humidity

30 to 50 % (Napier. 2000)

## General comment

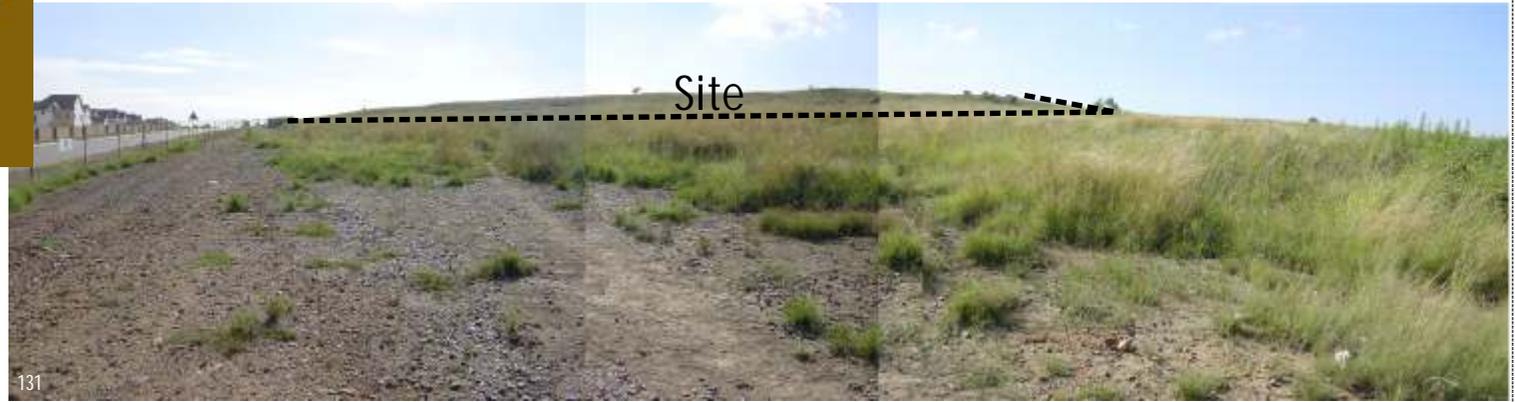
Summers are warm to hot, with fairly dry air, relieved by thunder storms generated from thermal air movement. Hail is not uncommon. Winter days are pleasantly sunny with clear cold to very cold nights. (Napier. 2000) The site is predominantly grassland with scattered trees in the wetter parts.

FIGURE 126: Aerial Photograph of the bigger area surrounding the site. (Tswane Council, 2003)





# Site Context



88

FIGURES 131-133: Photographs of the Site. (Steyn, 2003b)



# Site Context



FIGURES 134-136 :Photographs of the Site. (Steyn, 2003b)

# Site Context

Until a while ago the surrounding area of the site has been a rather quiet residential area for the higher income people living there. But Garsfontein Road has become a major commercial development axis. This involves an increase in traffic on Garsfontein Road and De Villebois Avenue. Some people also use De Villebois as a shortcut route to the R21. (Renier. 2003)

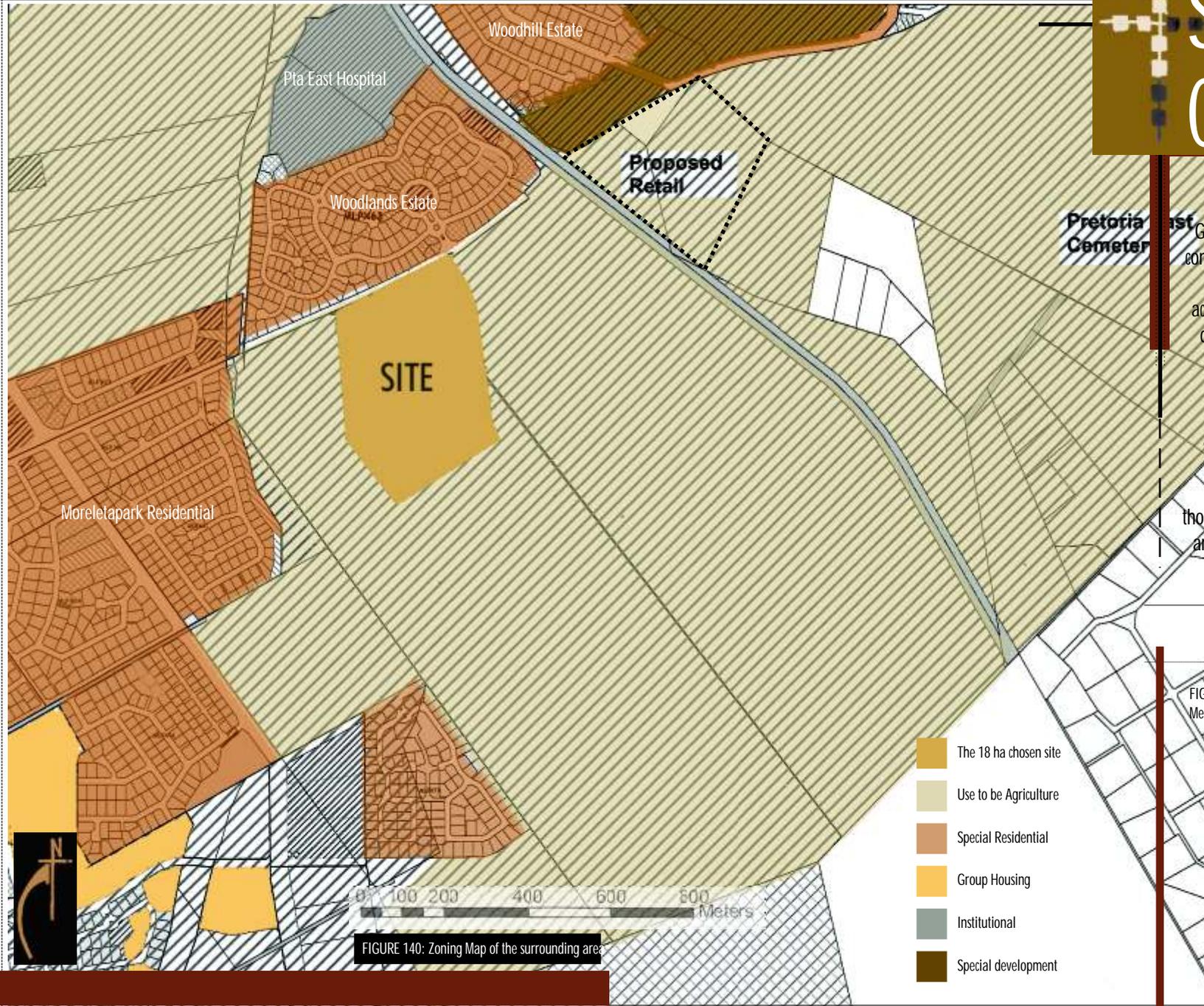


90

FIGURES 137-139: Photographs of the Site.  
(Steyn, 2003b)



# Site Context



A big new commercial development is about to be built on the corner of Garsfontein and De Villebois Drive. This complex will have 2360 parking bays and 40 000 square meters of commercial activities. All the necessary planning and design have already been done. (Louw. 2003.) This will have a tremendous influence on the area in terms of a growing number of people visiting the area. Traffic flow increase is inevitable. With the further addition of a church building accommodating 10 000 (ten thousand) people per service on a Sunday and other activities during the week, the activity in this area will multiply many times.

FIGURE 140: Zoning Map of the surrounding area (Tswane Metro. 2003)

FIGURE 140: Zoning Map of the surrounding area

# Site Context



FIGURE 141: Kimiad Golf Club



FIGURE 142: Wingate Golf Club



FIGURE 143: Wingate Shopping Center



FIGURE 144: Pretoria East Hospital



FIGURE 145: Pretoria Cemetery

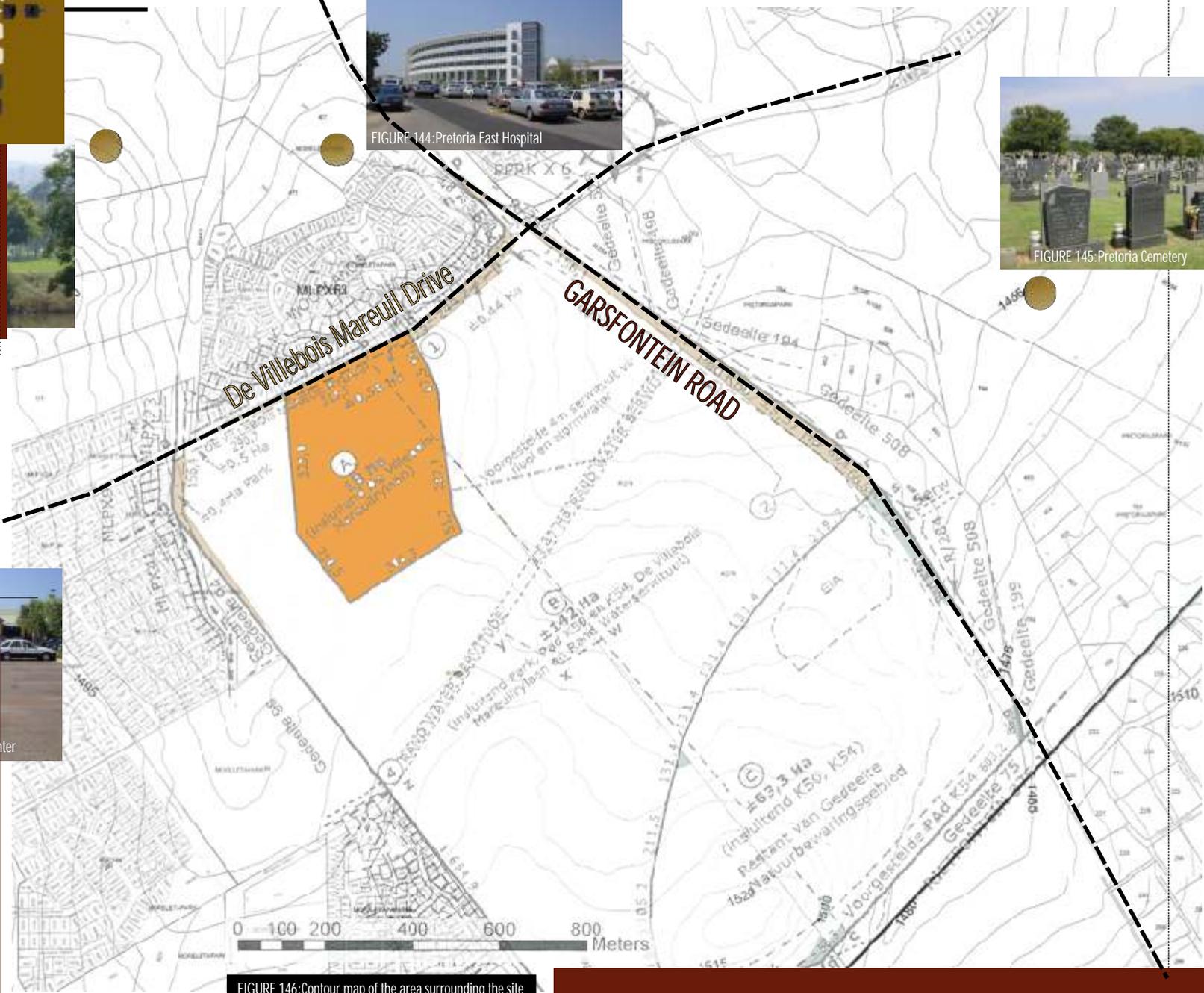


FIGURE 146: Contour map of the area surrounding the site

FIGURE 141: Kimiad Golf Club (Steyn. 2003b)

FIGURE 142: Wingate Golf Club (Steyn. 2003b)

FIGURE 143: Wingate Shopping Center (Steyn. 2003b)

FIGURE 144: Pretoria East Hospital (Steyn. 2003b)

FIGURE 145: Pretoria Cemetery (Steyn. 2003b)

FIGURE 146: Contour map of the area surrounding the site (Tswane Council, 2003)

# Site Context



FIGURE 147: Looking to the West (Steyn, 2003b)

FIGURE 148: Urban fabric on the western side of the site (Steyn, 2003b)

# Site Context

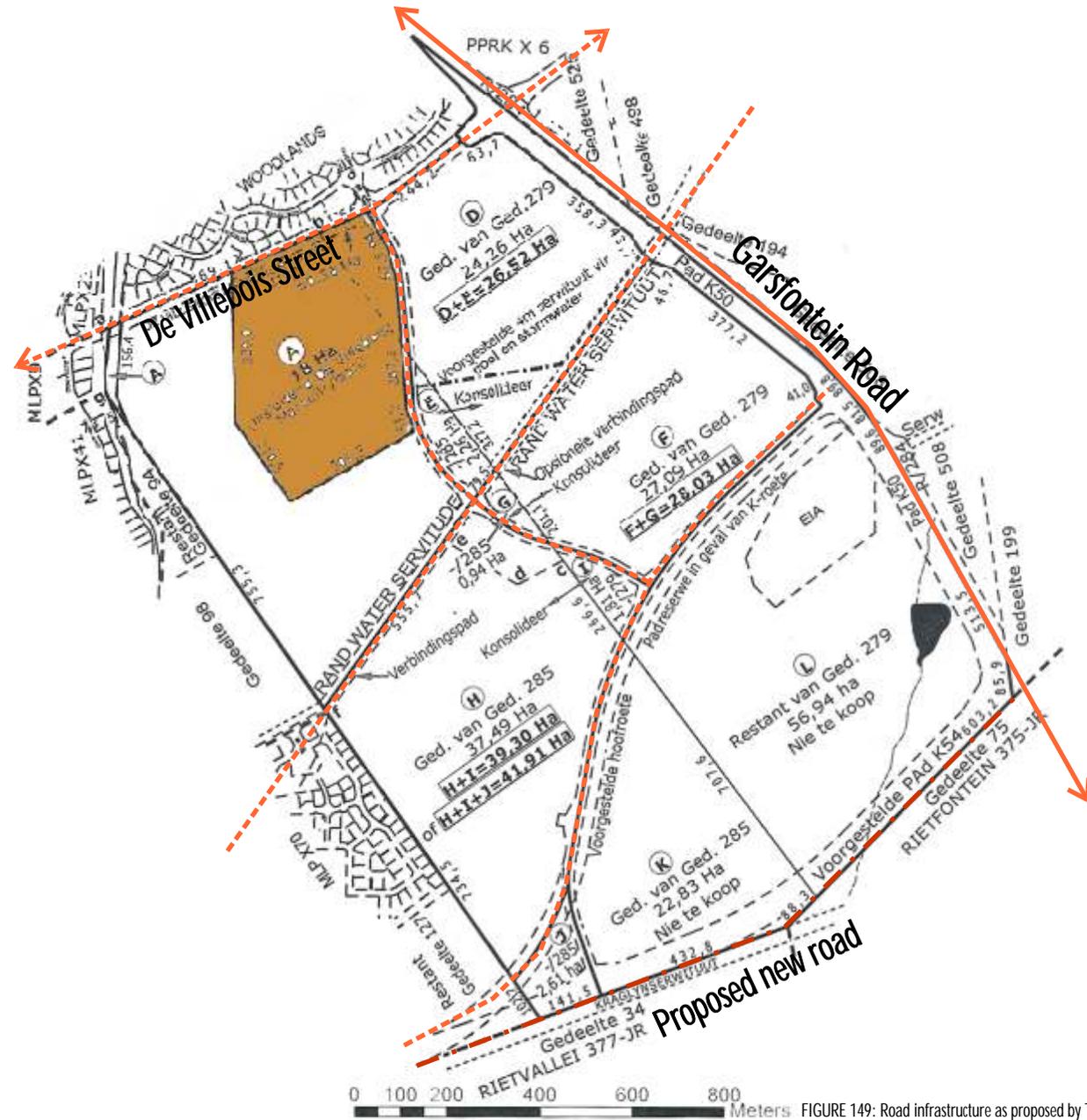


FIGURE 149: Road infrastructure as proposed by Traffic Engineers. (Tswane Council, 2003)

FIGURE 149: Road infrastructure as proposed by Traffic Engineers.

Index of this chapter.

Ideas from the Congregation.

Distribution of the Church Members.

A Survey on what the People want.

Interested and Affected Parties.

# User & Affected Parties



Each registered member and non-member attending the services and taking part in the Church activities, consist the User.

Since September 2002 up to March 2003, weekly information sessions concerning the new development were held. These are called the Delta Info-Sessions. It creates the opportunity for members to learn more about this new idea and give their opinions and ideas.

Ideas from the congregation concerning the new building and other developments:

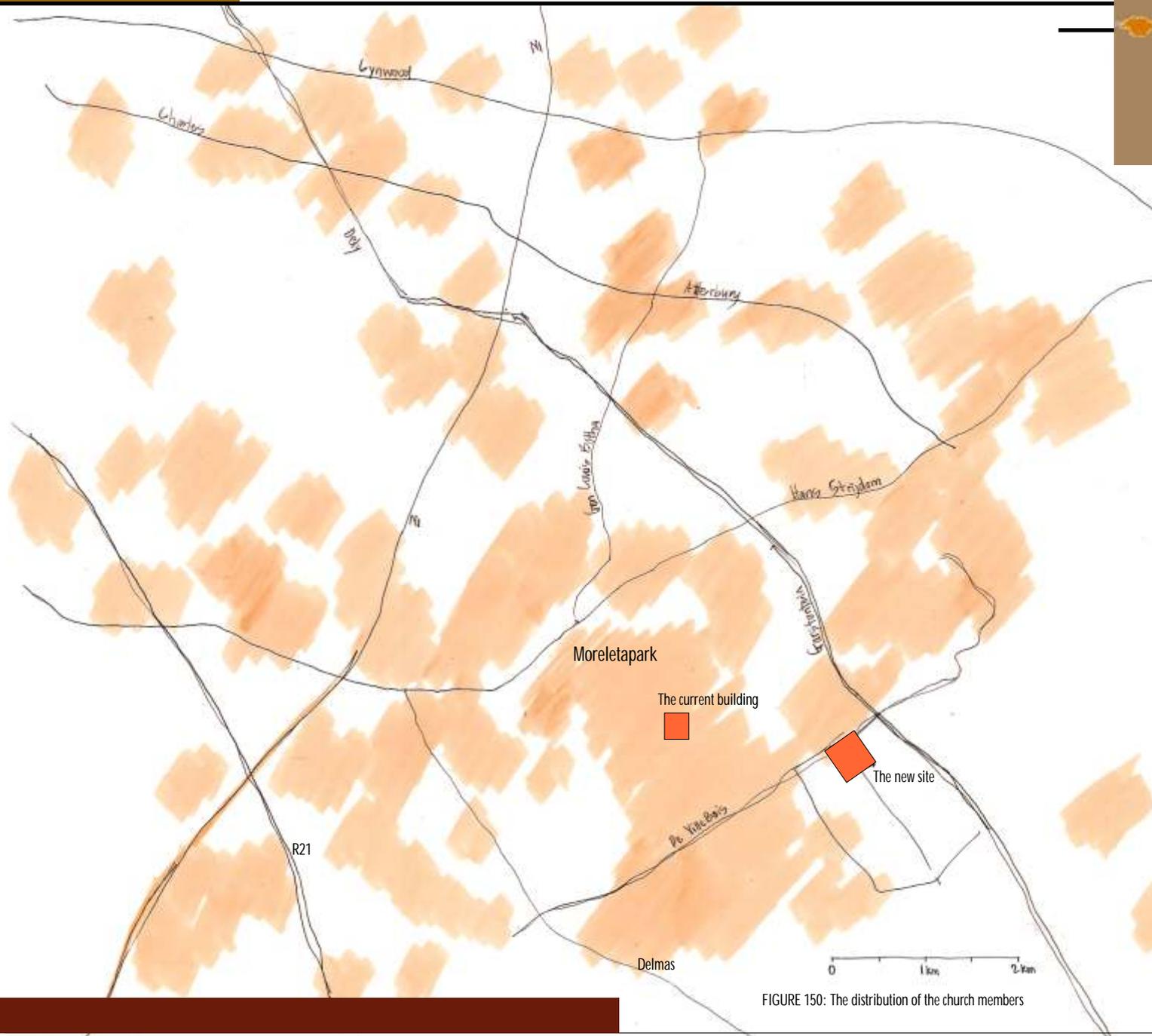
- Air conditioning is preferred
- Sound must be thoroughly distributed in the church space
- More information boards
- Better Mother's Rooms: more child-friendly
- An increasing use of technology i.e. large projection screens
- Shuttle service to transport people to the site
- Parking on levels or underground
- Two vehicular entrances to assist in smoother traffic flow
- The architecture should be human-friendly
- An attraction for the youth, used also on Fridays and Saturdays.
- A Wall of Memory
- Coffee shop
- Prayer garden
- Small Chapel for weddings and funerals
- Build a big cross
- A Therapy Center
- A dam and picnic site
- Christian school
- Retirement complex

While this new development is in the planning phase, church members are receiving word from God through the Bible. Haggai 1 "... Then the word of the Lord came through the prophet Haggai: 'Is it a time for you yourselves to be living in your paneled houses, while My house remains a ruin?... Give careful thought to your ways. Go up into the mountains and bring down timber and build the house, so that I may take pleasure in it and be honored, says the Lord... I am with you', declares the Lord. So the Lord stirred up the spirit of Zerubabbel and of Joshua and the whole remnant of the people. They came and began to work on the house of the Lord Almighty, their God." (NIV. 1985: 1403) (Rabie. 2003c)

Some of the people received visions from God relating to this new project. One person saw a big church already six years ago. Another saw the foundations being built where everyone is helping. Someone saw stairs leading up to the new Church. One person saw the Delta Logo in the year 2000 even before it was designed. The Delta Logo is the trademark of the new development. (Rabie. 2003c)

A map of Pretoria was put up at the church and the members used red round stickers to indicate the position of their homes. This was done to create a visual image of the approximate distribution of the congregation. From the results it is evident that the members are widely spread over the whole of Pretoria and outside its boundaries. The map on the next page illustrates the portion directly surrounding the current site and new site.

# The User



From this map the most important main routes can be deduced.

- R21 from the South
- N1
- Delmas Road
- Garsfontein
- Hans Strijdom
- Goede Hoop Road

FIGURE 150: The distribution of the church members

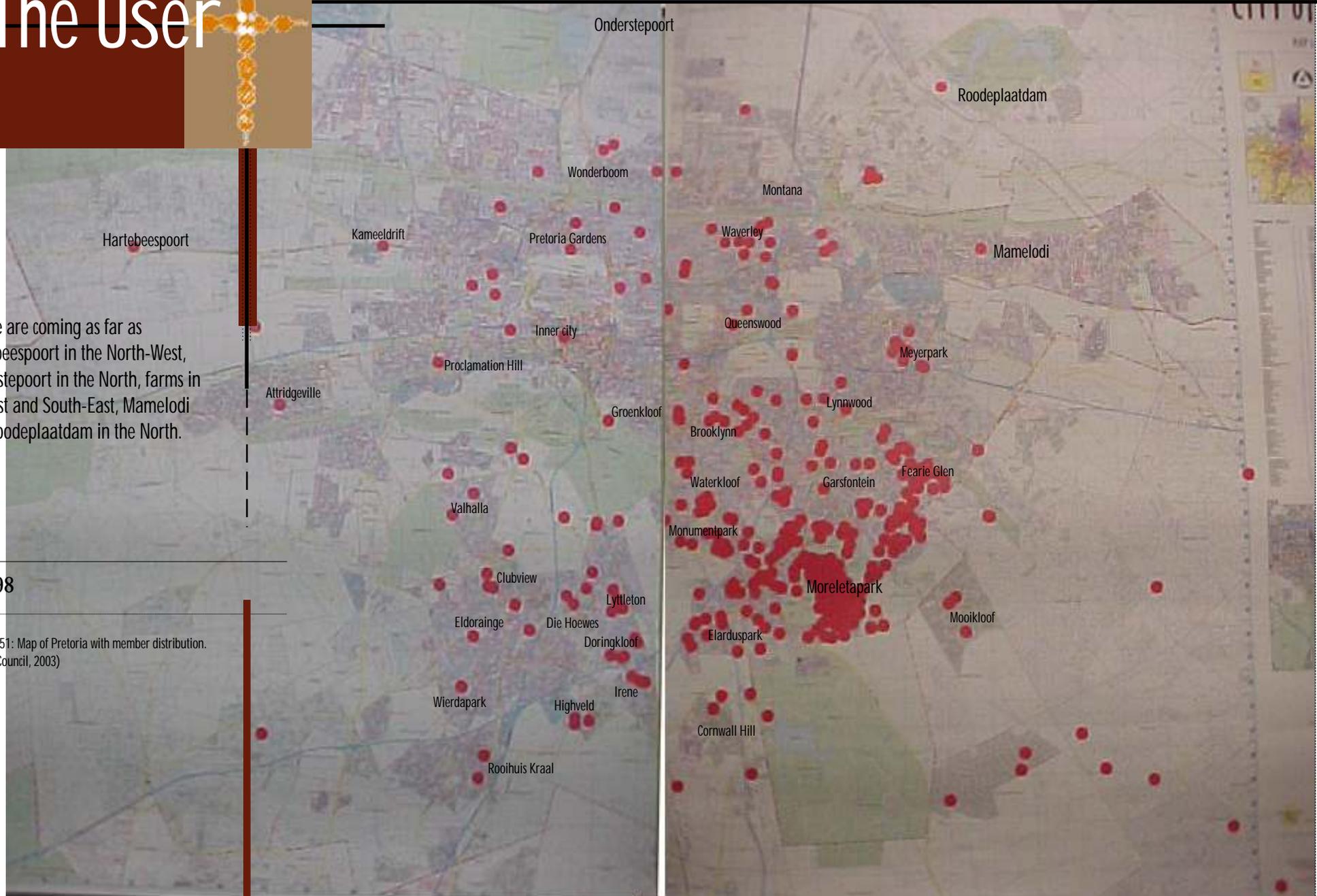
FIGURE 150: The distribution of the church members

# The User

People are coming as far as Hartbeespoort in the North-West, Onderstepoort in the North, farms in the east and South-East, Mamelodi and Roodeplaatdam in the North.

FIGURE 151: Map of Pretoria with member distribution. (Tswane Council, 2003)

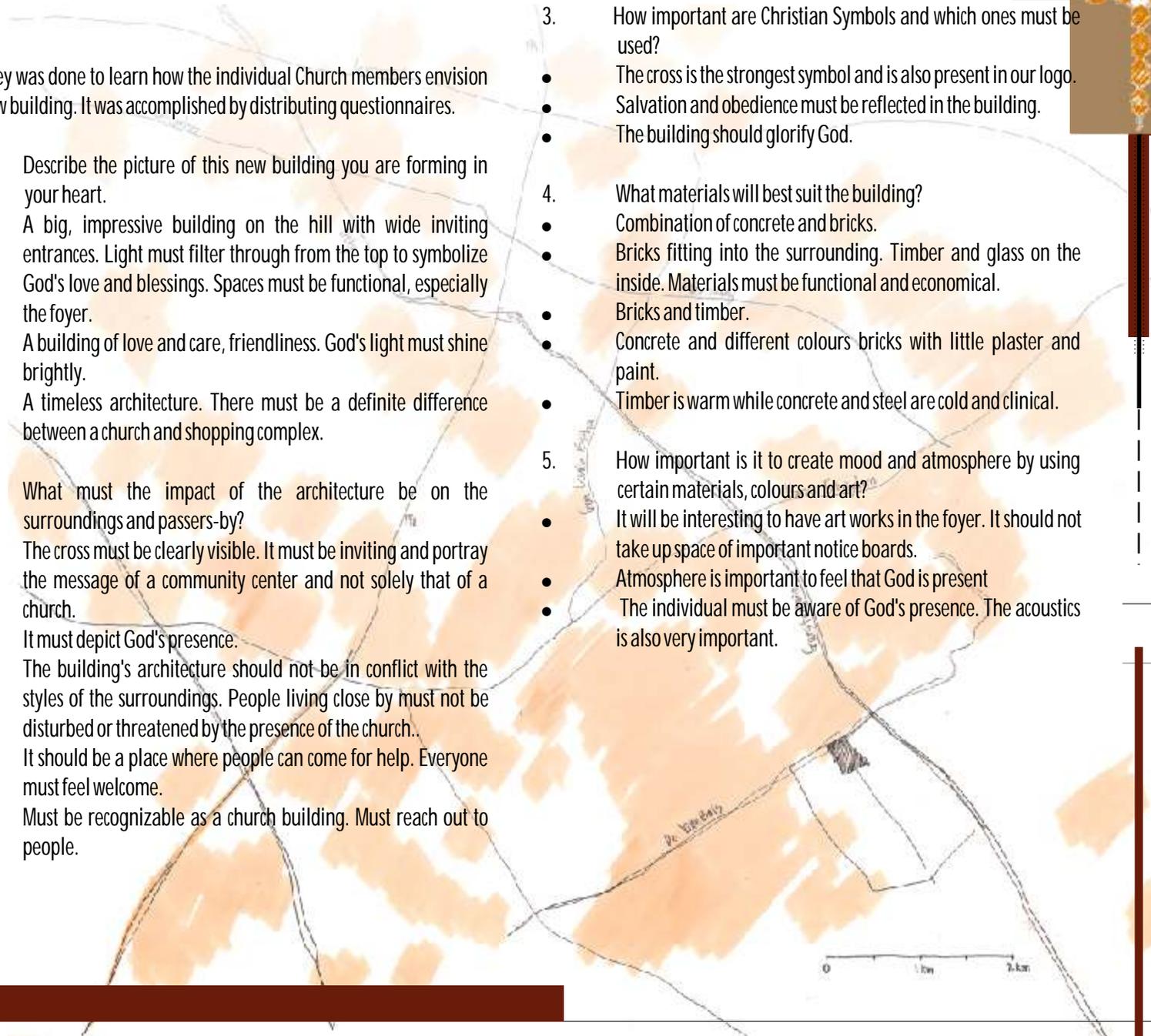
FIGURE 151: Map of Pretoria with member distribution.



A survey was done to learn how the individual Church members envision the new building. It was accomplished by distributing questionnaires.

1. Describe the picture of this new building you are forming in your heart.
  - A big, impressive building on the hill with wide inviting entrances. Light must filter through from the top to symbolize God's love and blessings. Spaces must be functional, especially the foyer.
  - A building of love and care, friendliness. God's light must shine brightly.
  - A timeless architecture. There must be a definite difference between a church and shopping complex.
2. What must the impact of the architecture be on the surroundings and passers-by?
  - The cross must be clearly visible. It must be inviting and portray the message of a community center and not solely that of a church.
  - It must depict God's presence.
  - The building's architecture should not be in conflict with the styles of the surroundings. People living close by must not be disturbed or threatened by the presence of the church..
  - It should be a place where people can come for help. Everyone must feel welcome.
  - Must be recognizable as a church building. Must reach out to people.

3. How important are Christian Symbols and which ones must be used?
  - The cross is the strongest symbol and is also present in our logo.
  - Salvation and obedience must be reflected in the building.
  - The building should glorify God.
4. What materials will best suit the building?
  - Combination of concrete and bricks.
  - Bricks fitting into the surrounding. Timber and glass on the inside. Materials must be functional and economical.
  - Bricks and timber.
  - Concrete and different colours bricks with little plaster and paint.
  - Timber is warm while concrete and steel are cold and clinical.
5. How important is it to create mood and atmosphere by using certain materials, colours and art?
  - It will be interesting to have art works in the foyer. It should not take up space of important notice boards.
  - Atmosphere is important to feel that God is present
  - The individual must be aware of God's presence. The acoustics is also very important.



# Interested & Affected Parties

Woodlands Estate is a home to a selected higher-income group of people. It is in the category of an upper class security village. This complex is situated directly across the street from the proposed site for the new church development.

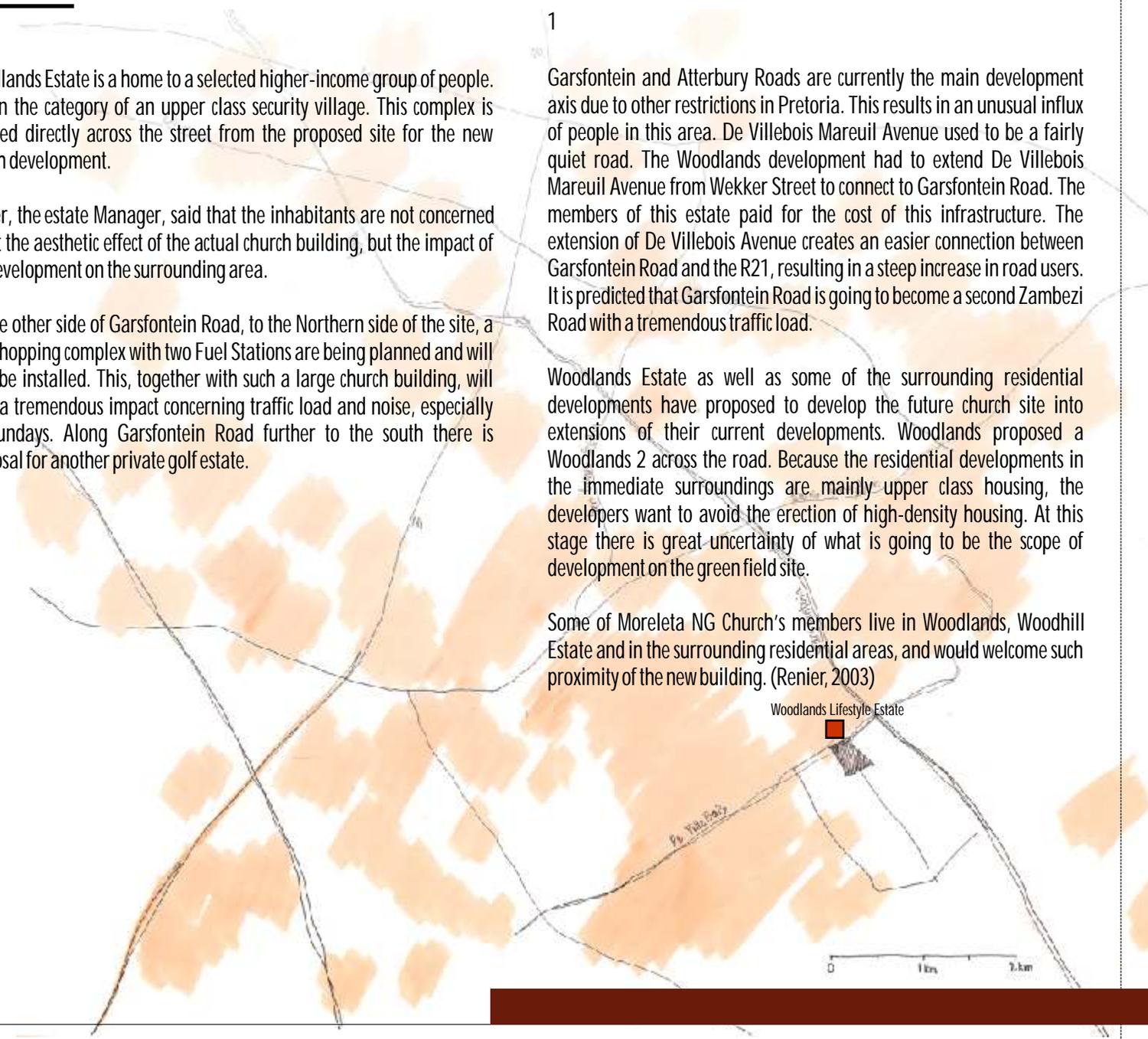
Renier, the estate Manager, said that the inhabitants are not concerned about the aesthetic effect of the actual church building, but the impact of the development on the surrounding area.

On the other side of Garsfontein Road, to the Northern side of the site, a new shopping complex with two Fuel Stations are being planned and will soon be installed. This, together with such a large church building, will have a tremendous impact concerning traffic load and noise, especially on Sundays. Along Garsfontein Road further to the south there is proposal for another private golf estate.

1  
Garsfontein and Atterbury Roads are currently the main development axis due to other restrictions in Pretoria. This results in an unusual influx of people in this area. De Villebois Mareuil Avenue used to be a fairly quiet road. The Woodlands development had to extend De Villebois Mareuil Avenue from Wekker Street to connect to Garsfontein Road. The members of this estate paid for the cost of this infrastructure. The extension of De Villebois Avenue creates an easier connection between Garsfontein Road and the R21, resulting in a steep increase in road users. It is predicted that Garsfontein Road is going to become a second Zambezi Road with a tremendous traffic load.

Woodlands Estate as well as some of the surrounding residential developments have proposed to develop the future church site into extensions of their current developments. Woodlands proposed a Woodlands 2 across the road. Because the residential developments in the immediate surroundings are mainly upper class housing, the developers want to avoid the erection of high-density housing. At this stage there is great uncertainty of what is going to be the scope of development on the green field site.

Some of Moreleta NG Church's members live in Woodlands, Woodhill Estate and in the surrounding residential areas, and would welcome such proximity of the new building. (Renier, 2003)



Index of the Chapter:

Symphony in Stone - Universiteitsoord, Jan van Wijk

Durban Christian Center, Koos Senekal

Modern Cathedral, Rafael Moneo

Church of Light, Tadao Ando

Church on the Water, Tadao Ando

Memorial Bridge, 3LHD

Modern Chapel, Daniel Bonilla

Crematorium, Axel Schultes

Auditorium in Glass, Rafael Moneo

Center Stage, Pawson Williams

O'Reilly Theater, Michael Associates

# Precedent Studies

'A Church...needs pure and devout forms, whatever these forms may be. Purity of form can only arise from careful and highly developed artistic work, which calls for a dedicated and highly developed artist.'  
Alvaro Aalto (Weston, 1997-98)



Location: Pretoria, South Africa

Architect: Jan van Wijk

Term of design: 1965

## Symphony in Stone

Universiteitsoord was built in 1965. (Universiteitsoord, 1985:3) The architect, Jan van Wijk, based the design in principle on that of the early Christian Basilica i.e. a rectangular building consisting chiefly of three roofs, a higher center one above the nave of the church, and two lower symmetrical side roof above the side aisles, with the space between the higher and lower roofs as the chief source of light. The traditional rectangle has been altered to a fan-shape, with the white pulpit as the focal point at the narrow end of the fan.

The 1 500 (one thousand five hundred) seats are arranged half circular around the narrow end of the fan in order to create an intimate atmosphere. The floor at the end of the fan slopes upwards towards the back of the church, making room for a spacious entrance hall underneath in the middle and providing seating for an additional 500 people. The front part of the building may be separated from the rest by means of a large curtain providing a space for 600 worshippers. The three roofs slant upwards in the direction of the pulpit and reach an impressive high point 24.4 meters above the place where the word is preached. (Steyn GM:7)

102

FIGURE 152: Exterior of Universiteitsoord NG Church. (Steyn MG:5)

Next page  
FIGURE 153: Construction of Universiteitsoord NG Church. 1965. (Universiteitsoord,1985:3)

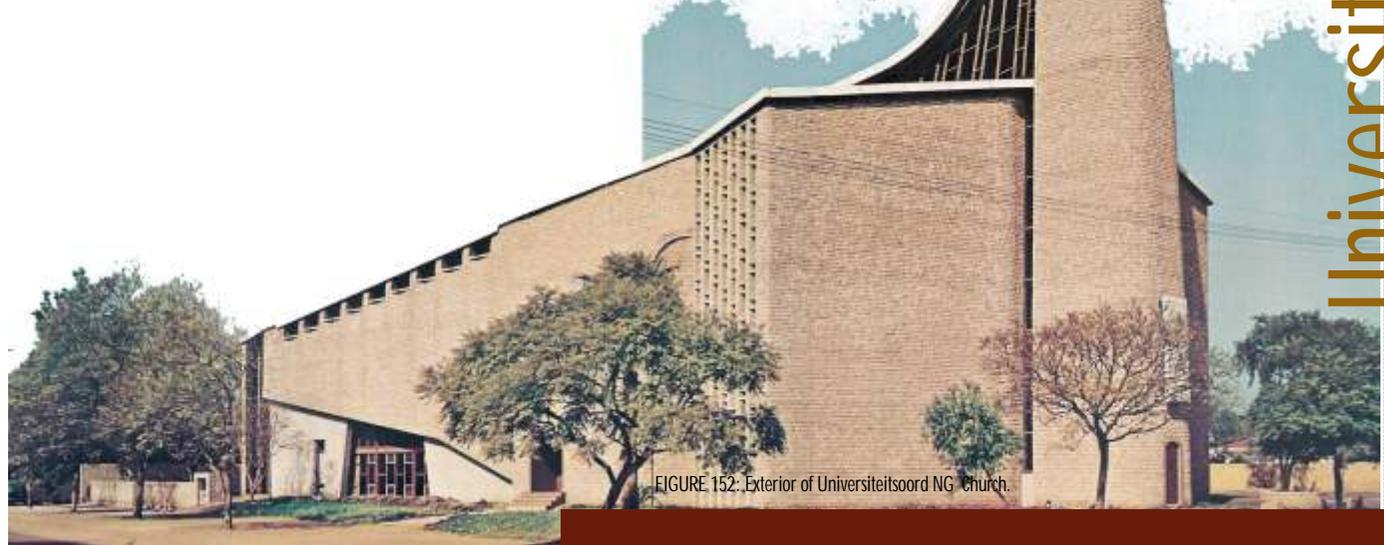


FIGURE 152: Exterior of Universiteitsoord NG Church.

Universiteitsoord

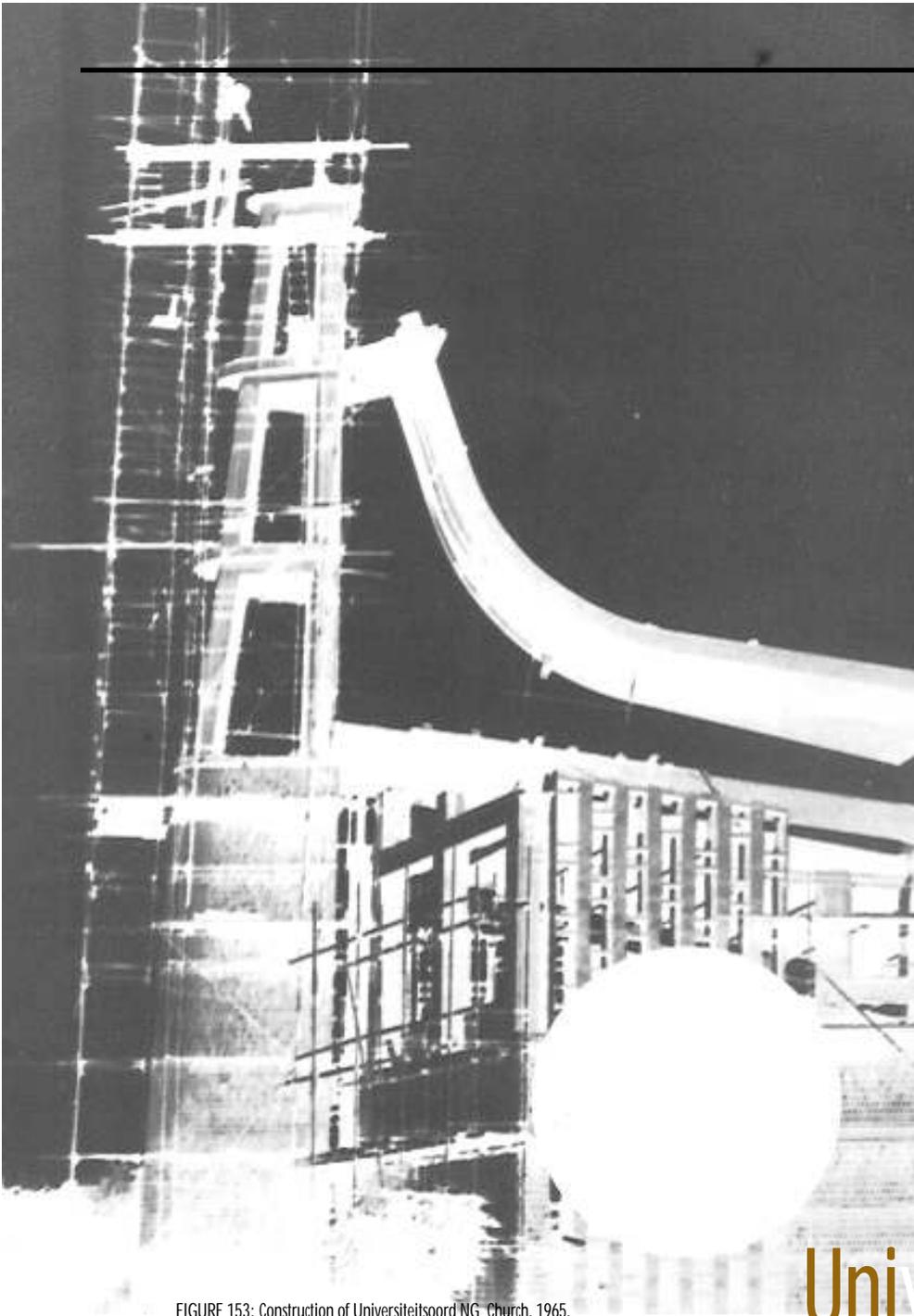


FIGURE 153: Construction of Universiteitsoord NG Church. 1965.

Universiteitsoord is chosen as a South African precedent study for its use of symbolism, materials and acoustics.

Symbolism:

1. The concept of the Trinity is reflected in the three massive laminated wooden arches supporting the roof.
2. The windows are arranged to grade from dark coloured ones at the back to gold coloured ones above the liturgical area, symbolizing the transition from darkness into light. On either side of the pulpit there are crosses subtly displayed in the coloured glass. (Steyn GM: 7)

Materials:

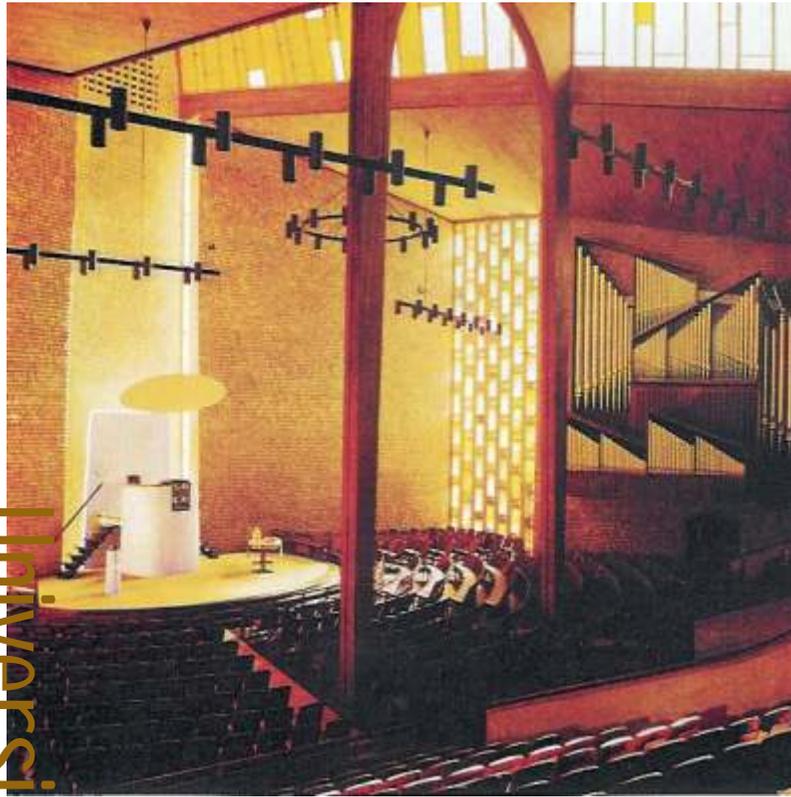
Concrete, stone and wood were chosen for their timelessness. The effect of these materials and the incoming light is warm and soft. (Steyn GM: 7)

The architectural form of the Church building is intended to remind one of the Bride awaiting her Groom. The Bible speaks of the Church as the Bride awaiting Christ's return. The image of this bride is sculptured in rough-cut stone to symbolize the imperfections of the humans comprising this body; but then also refers to the grace of God through accepting this imperfect bride.

Acoustics:

The organ is of great value to this congregation and the acoustic design of the interior is such to amplify music rather than speech. It gives lovely sound to song and classical music. To improve the quality of speech from the pulpit, a reflector was installed suspended directly above the pulpit. (Steyn GM: 8)

Universiteitsoord



Presently Universiteitsoord accommodates 2 200 (Two thousand two hundred) members each Sunday. Due to the technological development and use of electronic sound, an electrical sound system had to be implemented. When the church is 90% full, the acoustic levels during worship are excellent and a real thrilling experience. The atmosphere inside is one of peace and ease; one feels at home. On speaking to some of the ministers, they said that the raised pulpit does sometimes create a distance between them and the rest of the congregation, which should be avoided. They rather prefer to be on ground level. This is the tendency we see in contemporary Church architecture and must be adhered to.

FIGURE 154: Interior with pulpit and organ.

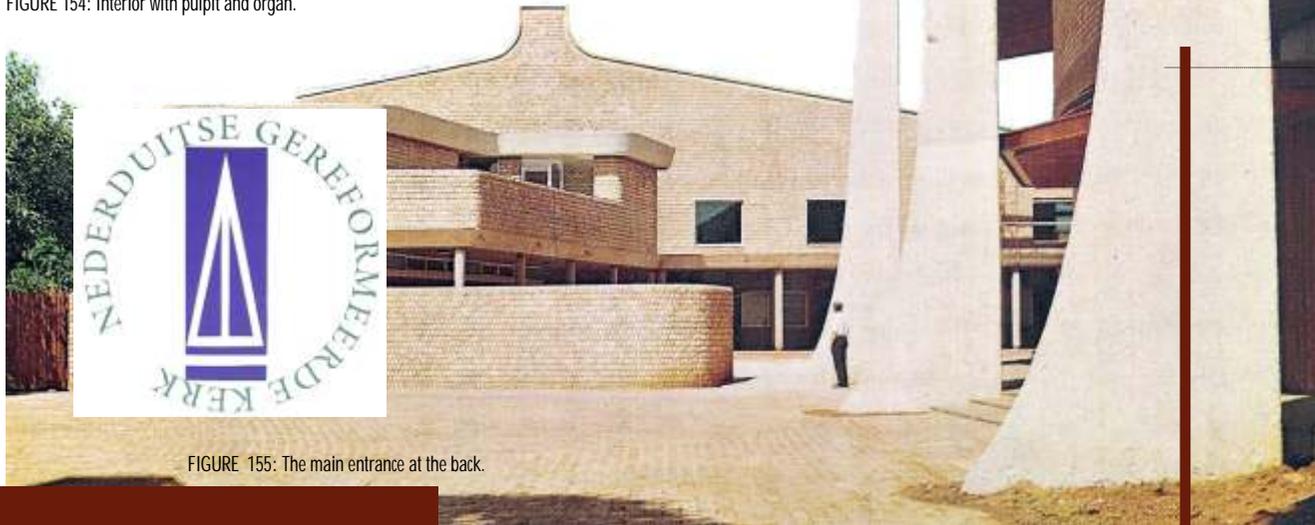


FIGURE 155: The main entrance at the back.

FIGURE 154: Interior with pulpit and organ. (Steyn GM:9)

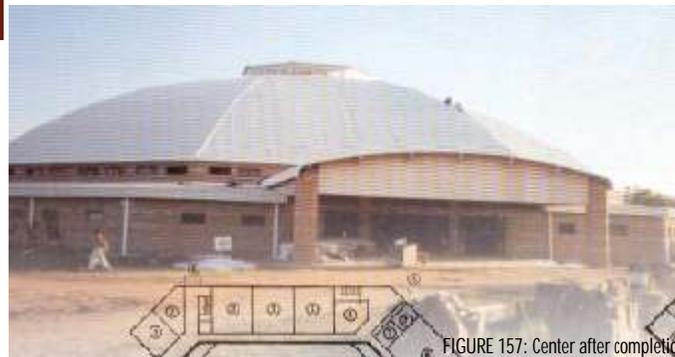
FIGURE 155: The main entrance at the back. (Steyn GM:3)

## Durban Christian Center

Location: Durban, South Africa

Architect: Koos Senekal

Term of design: pre 1999



This project consists of a church center or auditorium, chapel, media center, administrative offices and parking. It has become a landmark, not only from the freeway, but also from the air.

The main auditorium was required to seat approximately 5 000 (five thousand) people with an unobstructed view of the stage. It should also provide for a further 1 500 (one thousand five hundred) seats on a future gallery. All the other functions include an entrance foyer, ablution facilities, babies' rooms, counseling rooms, quest lounge and change rooms.

The auditorium:

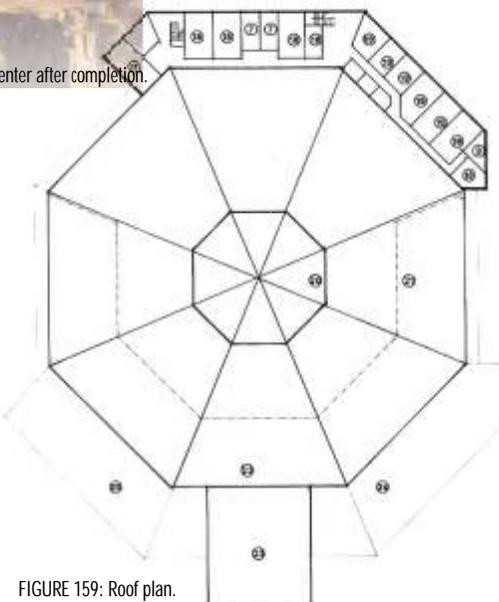
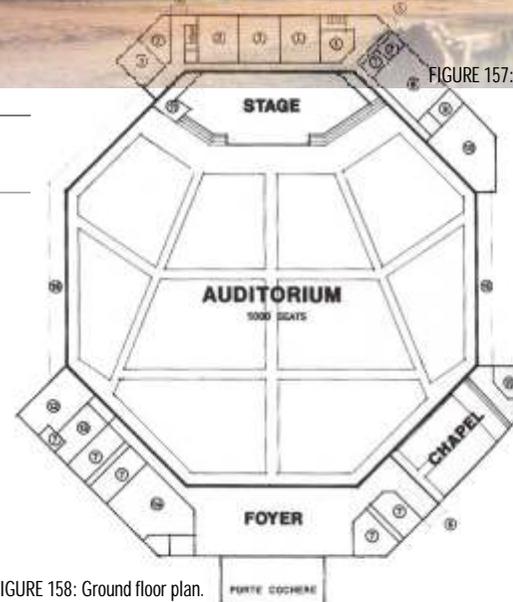
Another requirement for the design of the auditorium was that the back seats should not be too far from the front stage. This left the designers with three alternative shapes: square, circular or octagonal. They decided on the octagon with a domed roof. To improve the sight line, the auditorium was to have a sloping floor with a raised stage. The stage had to be large enough to accommodate a praise and worship team as well as a choir of 80 people. Access to the stage from the back and change rooms were crucial. The clear span of the auditorium is 60 meters, with each octagonal side 25 meters wide. The sidewalls rise 6 meters high while the apex of the dome reaches 19 meters above the floor.

FIGURE 156: Center during construction. (Senekal, 1999:18)

FIGURE 157: Center after completion. (Senekal, 1999:18)

FIGURE 158: Ground floor plan. (Senekal, 1999:20)

FIGURE 159: Roof plan. (Senekal, 1999:21)



**The Chapel:**

The Chapel seat 250 people and also has a sloping floor and raised stage. This space is used for special services such as weddings, funerals and seminars. The Chapel has a separate entrance with separate ablution facilities.

**Lighting:**

Natural and artificial lighting are used. Natural light enters through the raised roof light made of polycarbonate sheeting. Artificial lights, 300 lux strong, are concealed to create washes of light along the walls and roof. All lights, stage lights and the sound are controlled from a central station in the center of the auditorium. Stage lights are hung from the roof structure in front of the stage.

**Ventilation and air conditioning:**

The ventilation of the auditorium is controlled by four large extract fans situated in the sidewalls of the turret on top of the roof. All the other areas are air-conditioned by means of split air conditioning units.

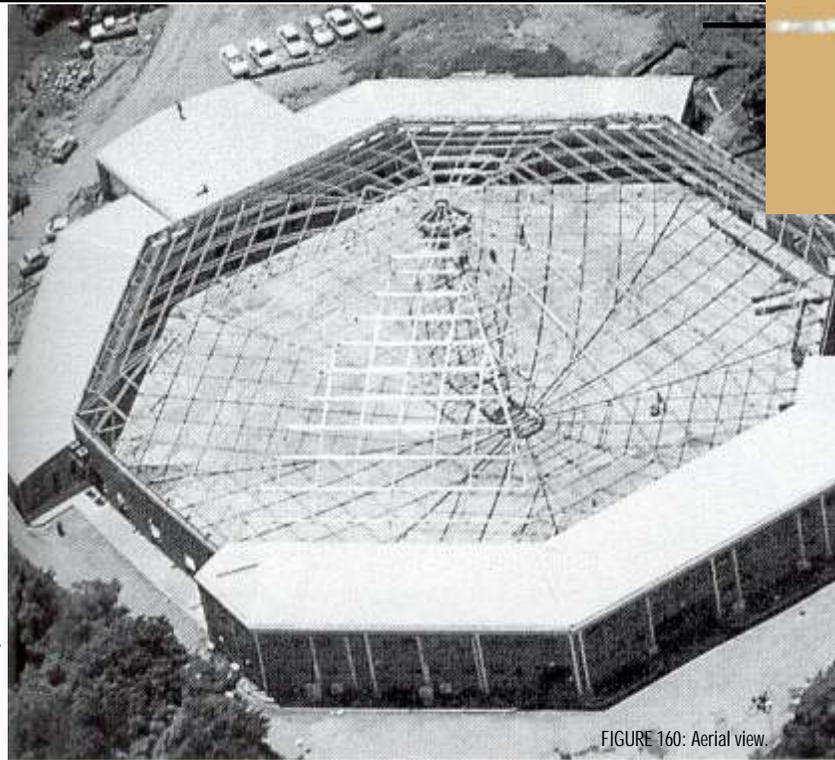


FIGURE 160: Aerial view.

This project is in many ways very similar to the project of Moreletapark NG Church. It is a valuable precedent study to learn from. Although this building is not quite as big as the one proposed for Moreleta, it is still useful to look at the design solutions in terms of shape and size. The challenge in both instances it to get the people as close to the stage as possible.

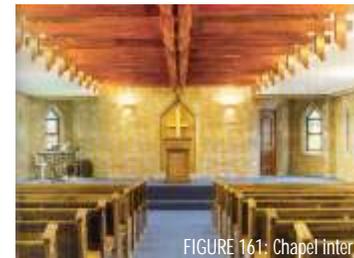


FIGURE 161: Chapel Interior



FIGURE 162: Auditorium interior.

# Precedent Studies

GOD IS IN THE HOUSE

Location: Los Angeles

Architect: Rafael Moneo

Term of design: post 1994



FIGURE 163: Exterior view from Grand Avenue



FIGURE 164: Exterior view from the High way.



FIGURE 165: Exterior view Temple Street.

## Modern Cathedral

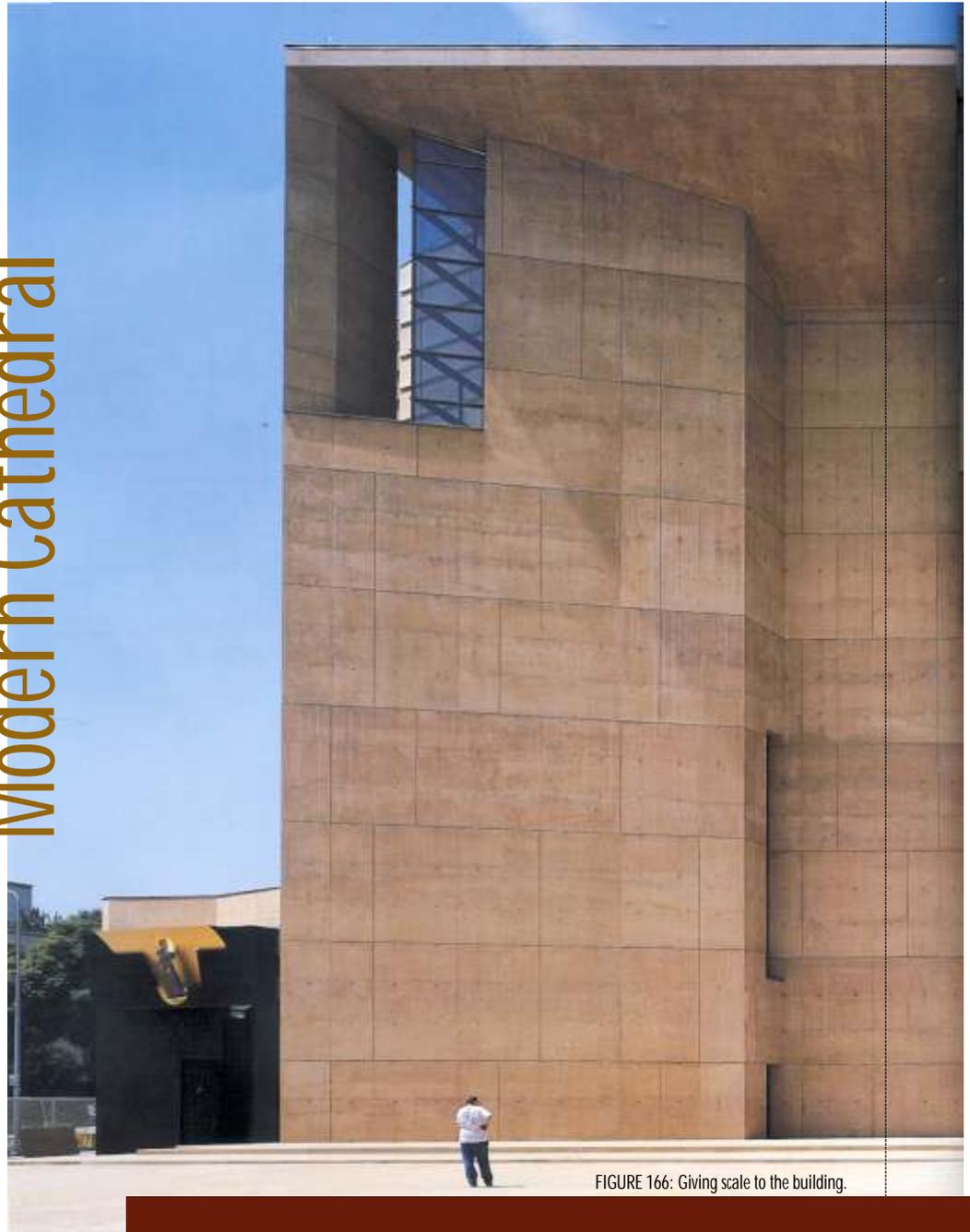


FIGURE 166: Giving scale to the building.

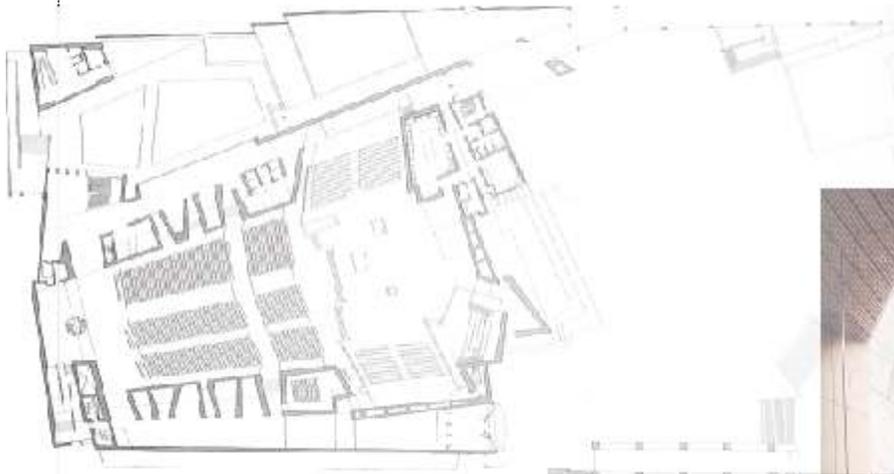


FIGURE 167: Ground floor plan.

This modern cathedral was built to replace the building destroyed by an earthquake. The cathedral is asymmetrical in form and in its placement on the rectangular site. The accompanying plaza is designed to serve civic amenity and outdoor services. There is an outdoor café with olive groves and fountains to soften the huge expanse of concrete.

The cathedral may be entered through massive bronze doors to the south or a more modest entry to the north, down ambulatories lined with wedge-shaped chapels that face outward to separate private devotion from public worship. The cathedral serves 3 000 (three thousand) people.

Again we see the use of light to create mood and a certain atmosphere. The architect said: "What they all share, is light as the protagonist of a space that tries to recover the sense of the 'transcendent' and is the vehicle through which we are able to experience what we call sacred" Most of the glass is masked by screens of veined Spanish alabaster to create a soft glow, reminding one of the Byzantine era. (Webb, 2002:44)

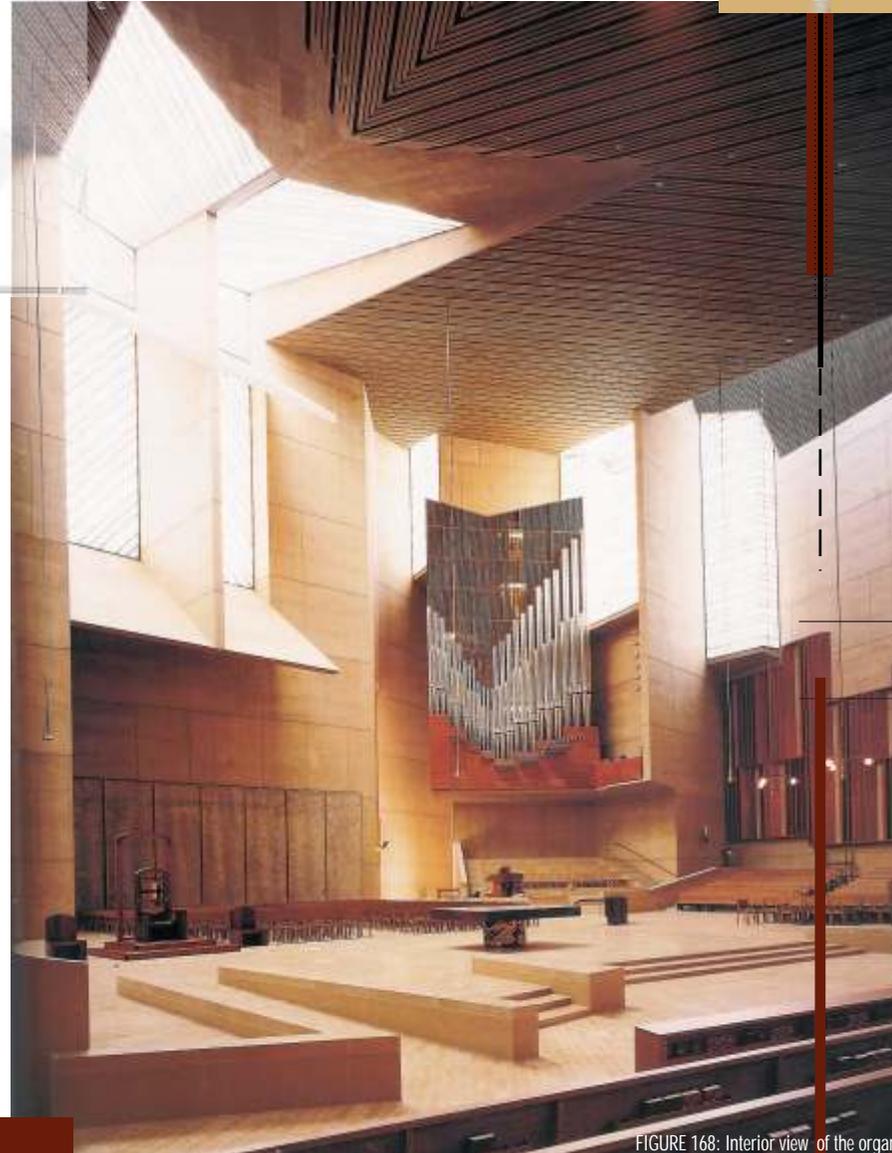


FIGURE 168: Interior view of the organ.

# Precedent Studies

The photographs are enough to portray the spatial character of this Church. It seems that when one finds oneself inside, it will be an experience where one is in awe and wonder of God's greatness. The huge size of the exterior and interior space humbles one but is also a comfort and reassurance of the Creator's love. The pigment added to the concrete gives the interior space a warm glow. There is very little colour on the inside and the space tends to become monochrome and somewhat dull. The Bible is rich in colours with definite symbolic meaning and could have been incorporated in some areas. But overall the spatial qualities of the interior are very successful in creating a sacred atmosphere. Interestingly, this church has an added tower, not often seen in modern churches. During the last decade the tendency was to move away from the tower and its traditional connections, but presently there is a desire to once again include such features. The exterior appearance of the building seems to become uninviting although anyone is welcome to enter. It is a tremendous challenge to create a building of this scale that is still friendly and welcoming, the latter being a necessity in the

109

FIGURE 169: Interior model showing lighting effects (Webb, 2002:45)

FIGURE 170: Inside the Modern Cathedral. (Webb, 2002:48,49)



FIGURE 169: Interior model showing lighting

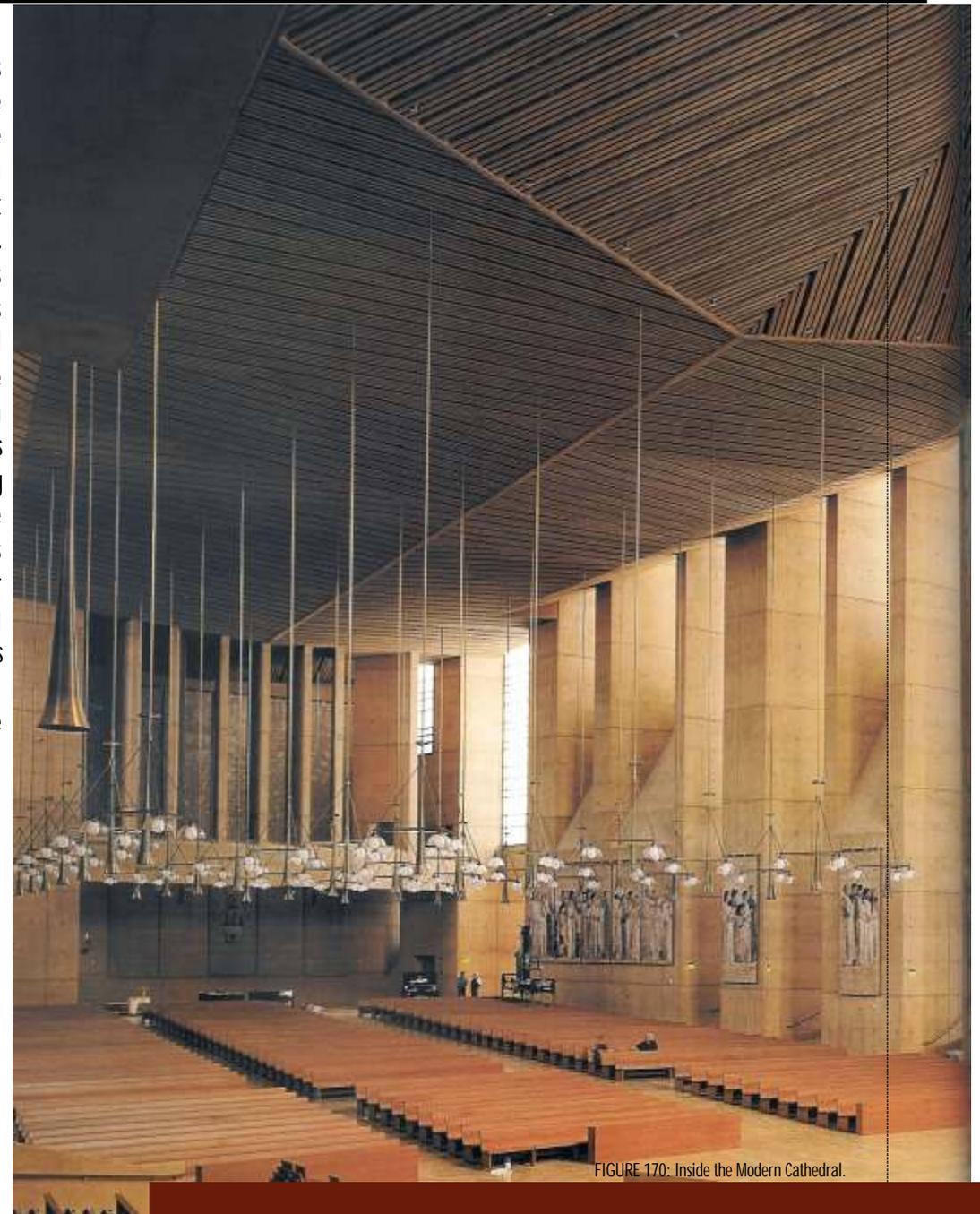


FIGURE 170: Inside the Modern Cathedral.

# Precedent Studies

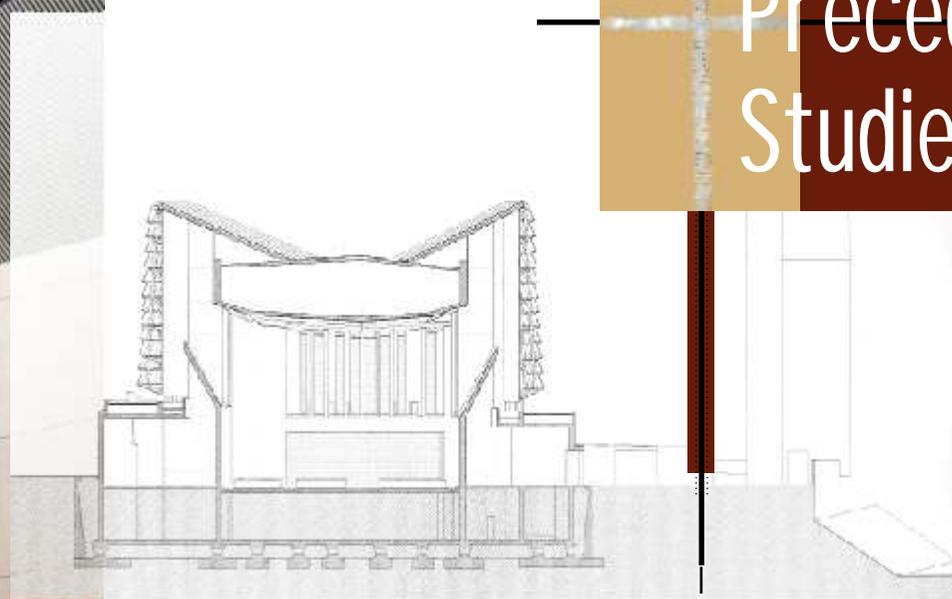


FIGURE 171: Section through the building and



FIGURE 172: Longitudinal section.

FIGURE 171: Section through the building and tower. (Webb, 2002:45)

FIGURE 172: Longitudinal section. (Webb, 2002:44)

Location: Ibaraki, Osaka

Architect: Tadao Ando

Term of design: 1989

Site area: 838 sqm

Building area: 113 sqm

Total floor area: 113 sqm

## Church of Light

- A. GATHERING SPACE
- B. MINISTER'S ROOM
- C. LOBBY
- D. SACRISTY
- E. CHANCEL
- F. OFFICE
- G. RESTROOM
- H. OFFICE

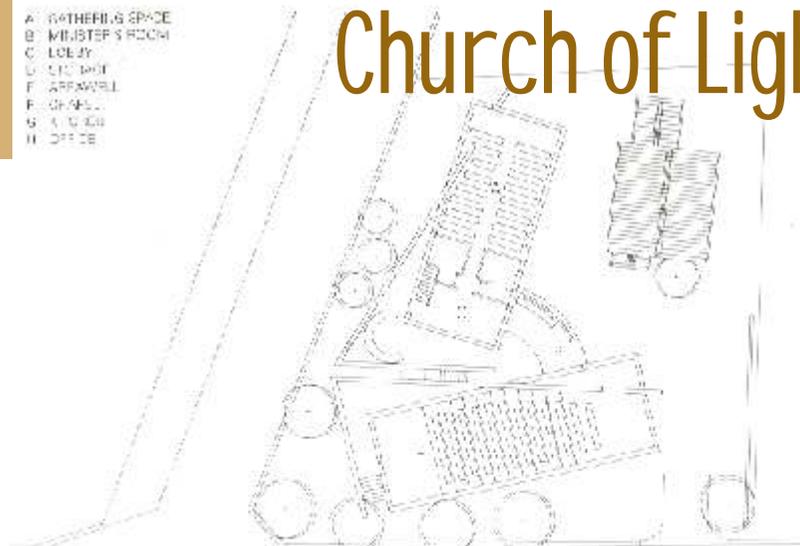
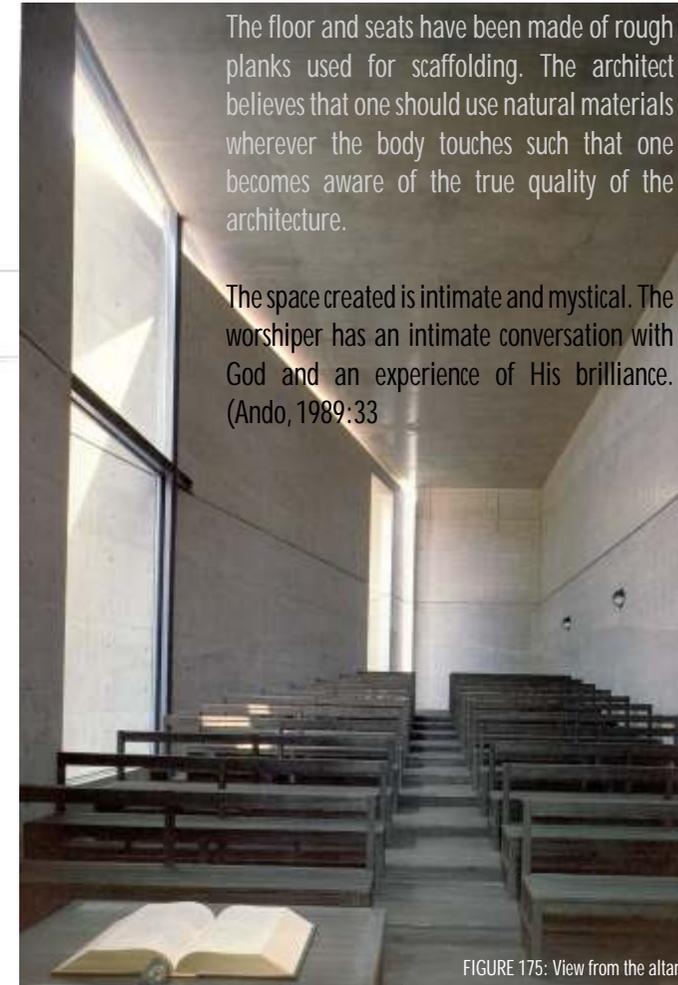


FIGURE 173: Site plan.



FIGURE 174: Exterior view.



The floor and seats have been made of rough planks used for scaffolding. The architect believes that one should use natural materials wherever the body touches such that one becomes aware of the true quality of the architecture.

The space created is intimate and mystical. The worshiper has an intimate conversation with God and an experience of His brilliance. (Ando, 1989:33)

111

The brilliant effect of light and the simplicity of the form of this chapel is what make it so striking. Tadao Ando has once again achieved the desired effects with a combination of natural and man-made features.

This is a valuable precedent study when one can learn from his manipulation of light and architectural form. When looking at the photographs, the viewer is taken up by the awesome display of light through the thin slits in the wall. He has made very few openings in the building, because the light becomes brilliant only against a very dark background. The Cruciform is a recurring theme throughout the building. He uses light to portray the cross at the back of the chapel, reinforcing the strong symbolism of both elements, light and the cross.

FIGURE 173: Site plan. (Church of the Light, 1999:40)

FIGURE 174: Exterior view. (Church of the Light, 1999:40)

FIGURE 175: View from the altar. (Ando, 1989:30)

FIGURE 175: View from the altar

# Precedent Studies

In this project it is evident that the simpler the form and use of materials, the greater the impact on the heart of the beholder. Geometrical lines and light, objects perceived daily, becomes sacred and determining of emotions.



FIGURE 176: Chapel, view towards the altar.



FIGURE 177: Interior of the gathering space.

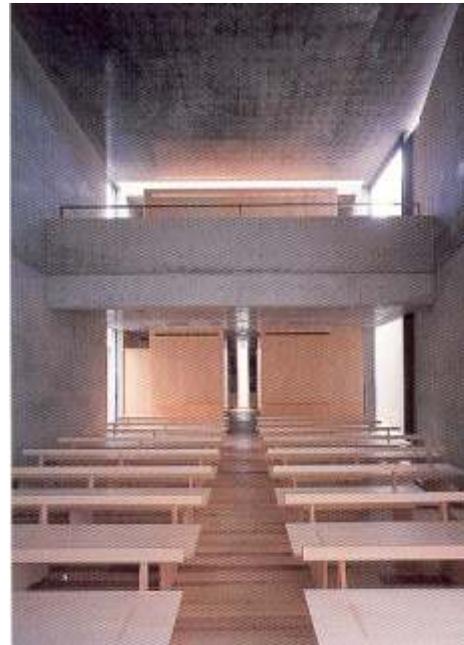


FIGURE 178: View from the gathering space.

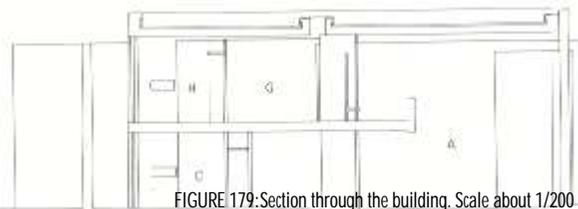


FIGURE 179: Section through the building. Scale about 1/200

FIGURE 176: Chapel, view towards the altar. (Ando, 1989:31)

FIGURE 177: Interior of the gathering space. (Church of the Light, 1999:43)

FIGURE 178: View from the gathering space. (Church of the Light, 1999:42)

FIGURE 179: Section through the building. Scale about 1/200 (Church of the Light, 1999:40)

# Precedent Studies

Location: Hokkaido, Japan

Architect: Today Ando

Term of design: 1985 - 1988

Site area: 6 730 sqm

Building area: 345 sqm

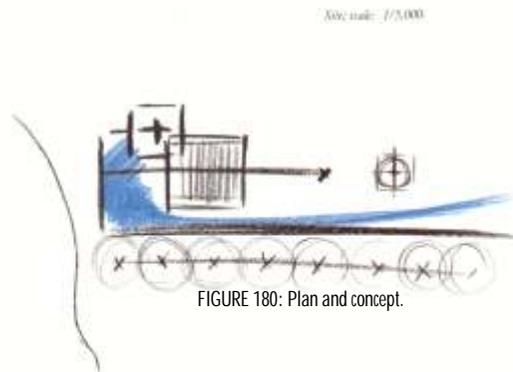
Total floor area: 520 sqm

113

FIGURE 180: Plan and concept. (Church on the Water. 1991:110)

FIGURE 181: Twilight view of Chapel, pond and forest. (Church on the Water. 1991:121)

Church on the Water is located on a plain between mountains where the area is covered with snow from December to April and becomes a beautiful white expanse. Water has been diverted from a nearby river and a man-made pond of 90 meters by 45 meters has been created. Water, although in a man-made form, is used to evoke emotions. The depth of the pond was carefully set so that the surface of the water would be subtly affected by the wind, and even a light breeze would cause ripples.



## Church on the Water

There is a procession along an outwards wall to the small chapel overlooking the pond and trees. At first one cannot see the water and then the scene unfolds. Suddenly one is enveloped in natural light and becomes aware of nature. It is tranquil and peaceful. The architect has used natural and man-made features to create a sacred atmosphere before the service commences.

FIGURE 181: Twilight view of Chapel, pond and forest.

The glazed side of the chapel facing the pond can be entirely opened, bringing one into direct contact with nature. A single line divides Earth and Heaven, the profane and the sacred. While sitting in the chapel, all kinds of natural sounds form part of the experience: rustling leaves, the sound of water and birds. (Church on the Water, 1991:110)

This project has been chosen as a precedent study for its use of water and integration with nature. Moreleta NG Church has a very strong theme of water flowing and becoming wider and deeper. Through the ages water has been integrated with architecture for numerous reasons. In this case, to create mood and possibly to be of symbolic importance. The Bible speaks of the Streams of Living Water.

The architect has succeeded to create equally impressive atmospheres during the day and during the evening.

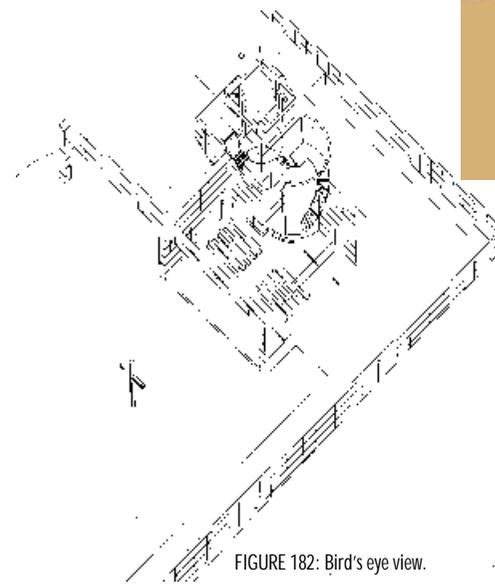


FIGURE 182: Bird's eye view.



FIGURE 183: Evening view across the pond.



FIGURE 184: The Pond.



FIGURE 185: The approach area at night.

FIGURE 182: Bird's eye view. (Church on the Water. 1991:111)

FIGURE 183: Evening view across the pond. (Church on the Water. 1991:113)

FIGURE 184: The Pond. (Church on the Water. 1991:117)

FIGURE 185: The approach area at night. (Church on the Water. 1991:117)

# Precedent Studies

Location: Rijeka, Croatia

Architect: 3LHD

Term of design: pre Dec 2002

This is a memorial bridge to the dead in the civil wars, built with great ingenuity and restraint. It speaks of sophistication and simplicity. The precast-concrete slabs monumentally define the approach from the nineteenth-century city. Between the slabs, a path made of red clay and epoxy (reminiscent of blood) emphasizes the thrust of the composition and the simple grace of its two gray guardians. At night the bridge is quietly transformed by lighting under the handrails that shines down the glass to illuminate the edges of the deck. The red path and pylons are also illuminated. (Memorial Bridge, 2002:46)

It is striking and thought provoking. Moreletapark NG Church wishes to have a memorial wall on the new site. It is important to remember that such an architectural feature speaks directly to one's emotions and must be treated sensitively and with respect for the users. This memorial wall is simplistic in the space it creates. The use of form and materials reflect the absoluteness of death. But in this absoluteness is the memories: precious and comforting. Comforting for Christians with the prospect of eternal life.

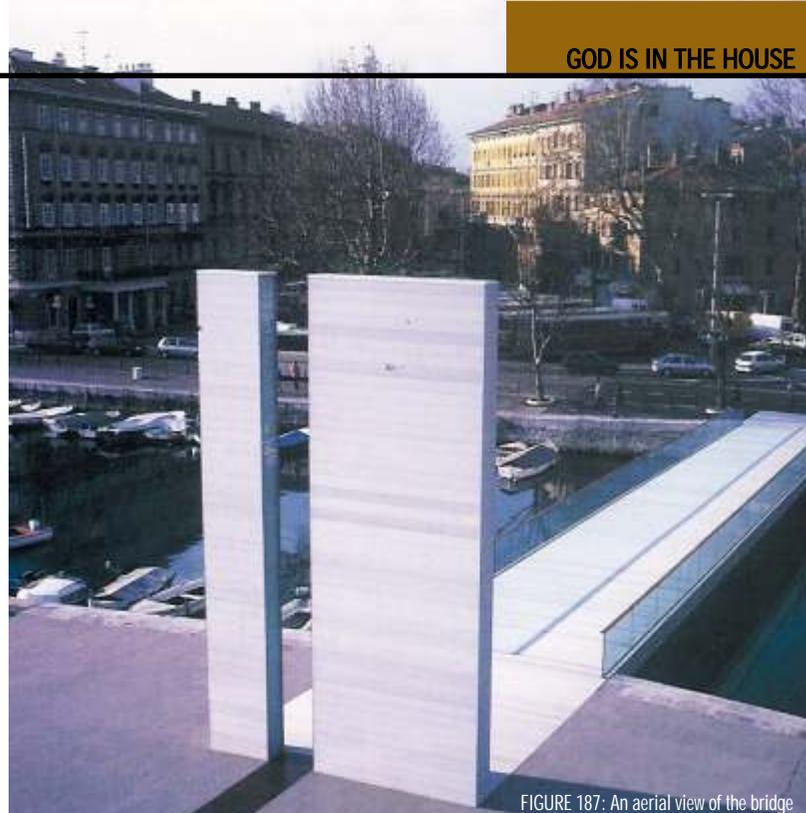


FIGURE 187: An aerial view of the bridge

FIGURE 188: Lighting used to create mood.

## Memorial Bridge

115

FIGURE 186: An illuminated scene of emotions. (Memorial Bridge, 2002:47)

FIGURE 187: An aerial view of the bridge. (Memorial Bridge, 2002:45)

FIGURE 188: Lighting used to create mood. (Memorial Bridge, 2002:47)



FIGURE 186: An illuminated scene of emotions.

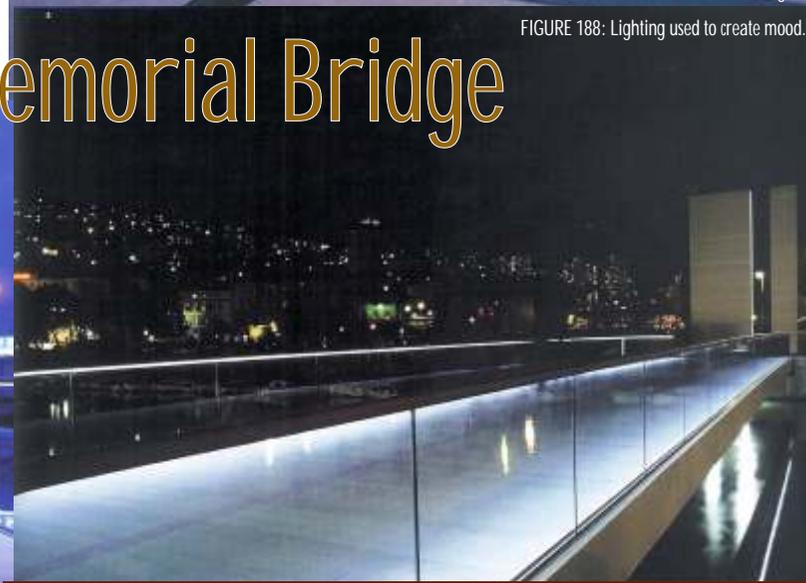




FIGURE 189: Chapel with closed doors.

- 1 entrance
- 2 pool
- 3 priest's office
- 4 sacristy
- 5 altar dias
- 6 nave
- 7 campanile

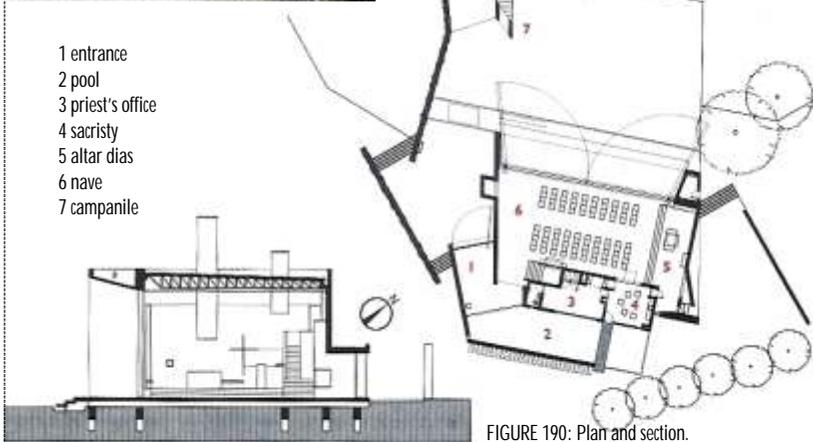


FIGURE 190: Plan and section.

The chapel is essentially a simple building with just one main space, entered through a large door. The route passes a shallow pool, walled to focus view on a line of trees, seen obliquely in passing as you come to the entrance to the nave. Light enters the rather dark space through small windows in the timber wall. A feature worth mentioning is the radical change when the two great timber doors are opened. The congregation can grow from a 100 to 2 000 (hundred to two thousand) people. (Chapel on Stage, 2002: 78)

This building is a little gem and very inviting with the large opened doors. It is very functional to accommodate a 100 to 2 000 people, and yet very intimate and personal. The use of light to create a religious atmosphere is used once again. The materials and simple forms articulate modern design such that the congregation of today can relate.

Location: Bogota, Colombia

Architect: Daniel Bonilla Arquitectos

Term of design: pre Dec 2002

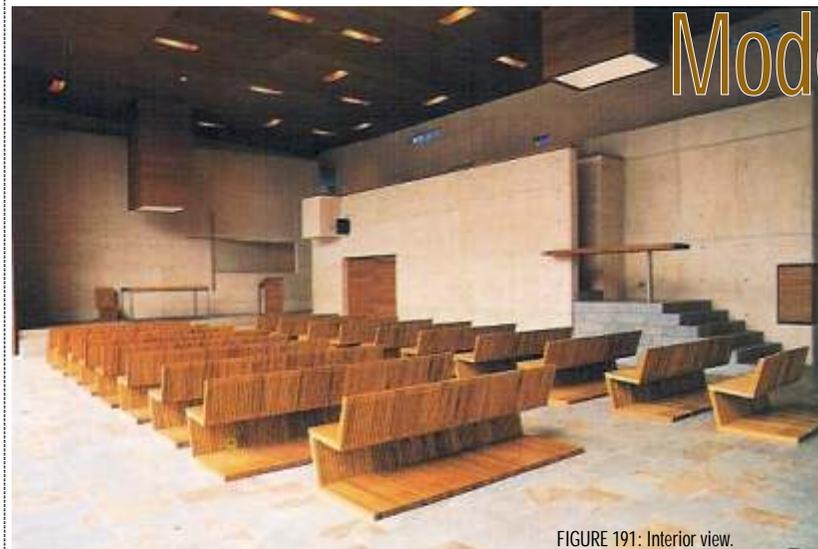


FIGURE 191: Interior view.

## Modern Chapel

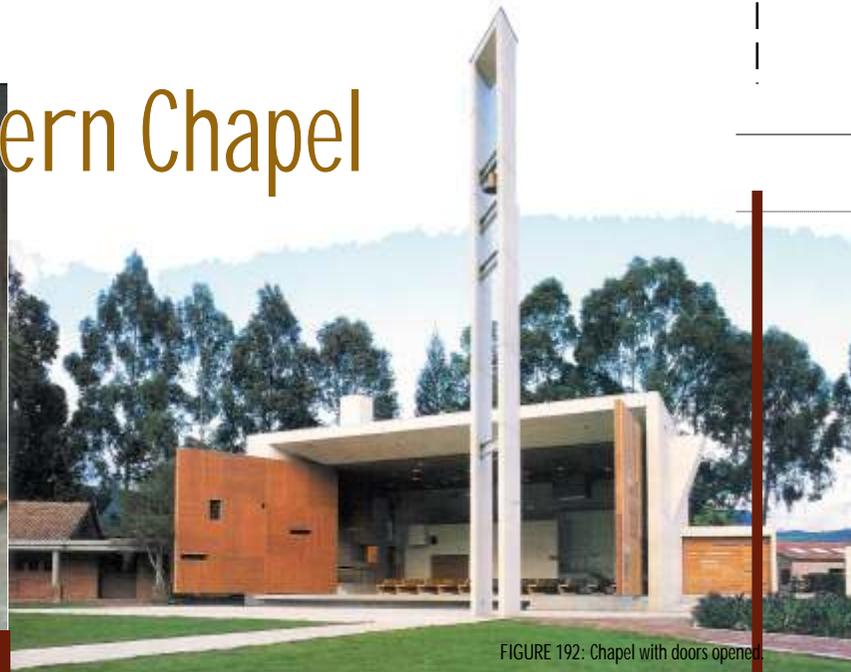


FIGURE 192: Chapel with doors opened.

FIGURE 189: Chapel with closed doors.

FIGURE 190: Plan and section.

FIGURE 191: Interior view.

FIGURE 192: Chapel with doors opened.

(Chapel on Stage, 2002:78,79)

# Precedent Studies

Location: Berlin-Treptow, Germany

Architect: Axel Schultes Architekten

Term of design: pre 2000

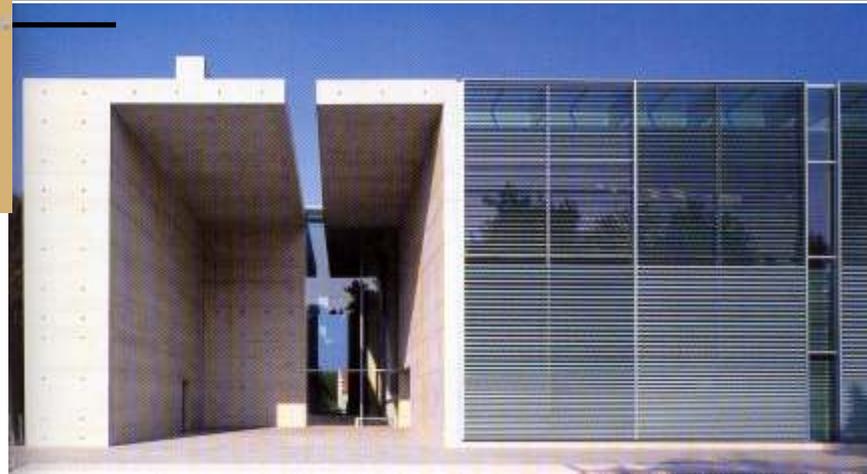


FIGURE 193: The entrance to the crematorium.

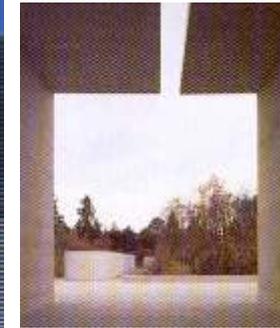


FIGURE 194: The exit to the cemetery.

## Crematorium

"Some mourners have told me they don't like it," says Axel Schultes, the Architect.

Does one read this pitiless block of a building as a symbol of the finality of death? The building reveals little about its function. Nevertheless, designing this crematorium was a delicate task because the building tends not just to the living but also to the dead. Cremation has become more popular since burial space has shrunk.

The building is most visible at dusk when the light behind the flat planes of the grilles reveals two cubes. The inner cubes enclose chapels. A slot interrupts the portal roof, opening a view of cloud-dotted blue sky. There is something heartening about the sliver of sky, a harbinger of the end of grief. The slot at the top runs through the building, leading the mourner into an enormous central interior gathering space.

The architects found the elegiac quality they sought for the building by reaching back through history in a search for forms that tap universal understanding. The simple dignity of the plan and the modern materials evoke a primordial, weathered purity of the past. Schultes conveys the visitor from the clamorous everyday world to a realm of calm and contemplation. (Russel, 2000:231)



FIGURE 195: Inside a Chapel.

Once again, the use of light in combination with the right materials and finishes, create the required atmosphere for this building. Forms are simple but brilliantly positioned. High ceilings and open walls give space to the grief of the mourner. These qualities are important to notice and should be remembered when designing the Church building for Moreletapark NG Church. Christians live in dependence upon God; not only for happiness but also for comfort in times of grief. People attending a service might be grief stricken, and should find comfort in the building between other believers.

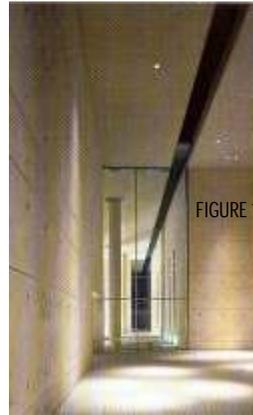


FIGURE 196: A sky-lighted slot runs from the portal through the gathering space.



FIGURE 197: Dusk reveals the layering.



FIGURE 198: View of the two Chapels.

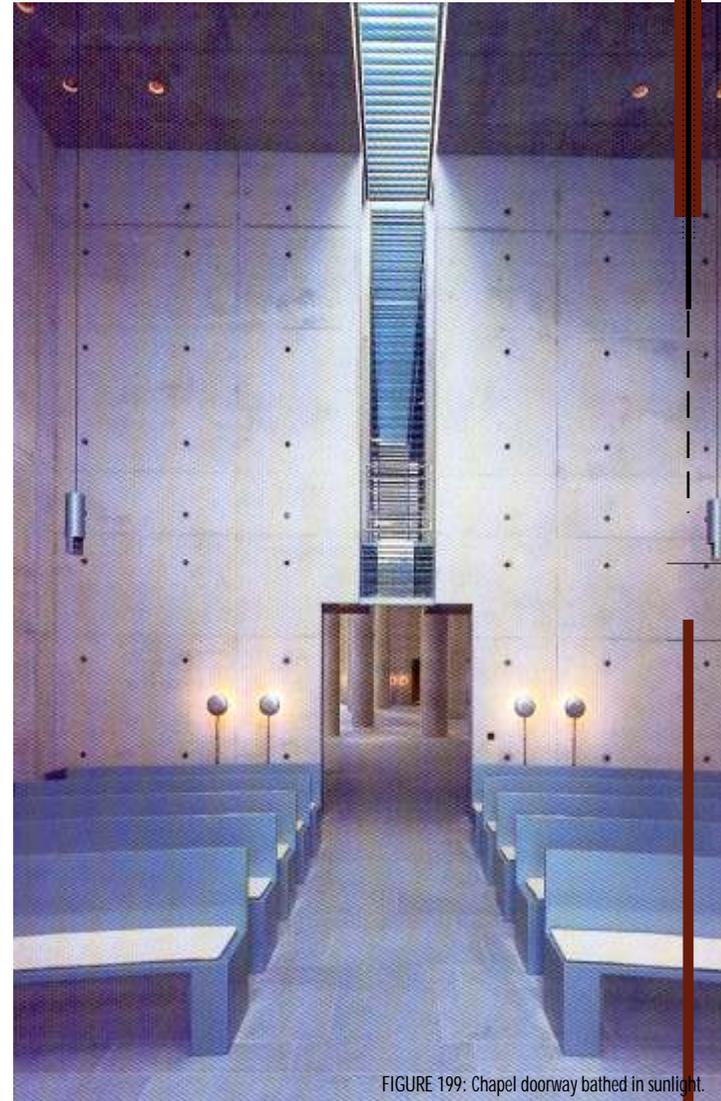


FIGURE 199: Chapel doorway bathed in sunlight.

FIGURE 196: A sky-lighted slot runs from the portal through the gathering space. (Russel, 2000:231)

FIGURE 197: Dusk reveals the layering. (Russel, 2000:227)

FIGURE 198: View of the two Chapels. (Russel, 2000:227)

FIGURE 199: Chapel doorway bathed in sunlight. (Russel, 2000:231)

## Auditorium in glass

Location: San Sebastian, Spain

Architect: Rafael Moneo

Term of design: pre 2000

Clad in a delicate glass membrane that changes like a chameleon's skin, Rafael Moneo's Kursaal auditorium forms a new icon for San Sebastian. At night the glazed forms of the Kursaal function as beacons at grand scale. They slip into view as you stroll about the city, electrified, elegant and mysterious. (Ryan, 2000:44) To achieve the abstract, mineral-like quality he wanted for the buildings, Moneo treated the exterior glass like a masonry cladding, rather than a transparent curtain wall. The glass is pressed and laminated, with a rippled exterior profile and sandblasted interior finish, and has the slightly greenish tint of breaking waves. Inside one finds soaring lobbies that surround each freestanding auditorium, creating wondrous space. (Cohn, 2000:221) The larger of the two translucent forms shelters a 1 828 (one thousand eight hundred and twenty eight) seat concert hall. It is equipped with the necessary flexible stage floor, sides and overhead elements so that the full spectrum of events, from poetry recitals to grand opera, can be easily accommodated. The smaller form encloses a 624 (six hundred and twenty four) seat auditorium, more intimate and less intensely serviced. (Ryan, 2000:44)

In the scenario of Moreleta NG Church, the number of people to be accommodated is such that the form and layout of an auditorium must be considered. The current facility consist of an auditorium and stage. In this precedent study we see an interesting solution by placing the auditorium inside a block, thus concealing what's on the inside.



FIGURE 201: The lightened interior stairways

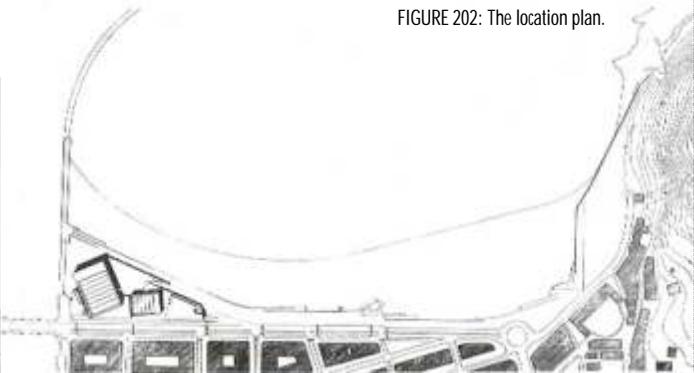


FIGURE 202: The location plan.

119

FIGURE 200: The exterior view. (Ryan, 2000:44)

FIGURE 201: The lightened interior stairways. (Cohn, 2000:220)

FIGURE 202: The location plan. (Ryan, 2000:48)

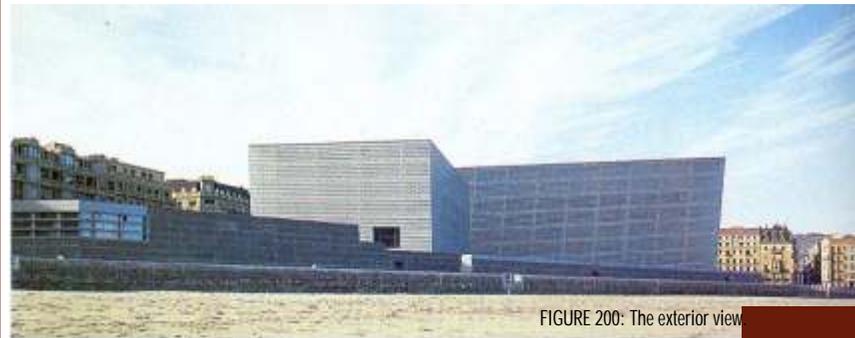


FIGURE 200: The exterior view

# Precedent Studies

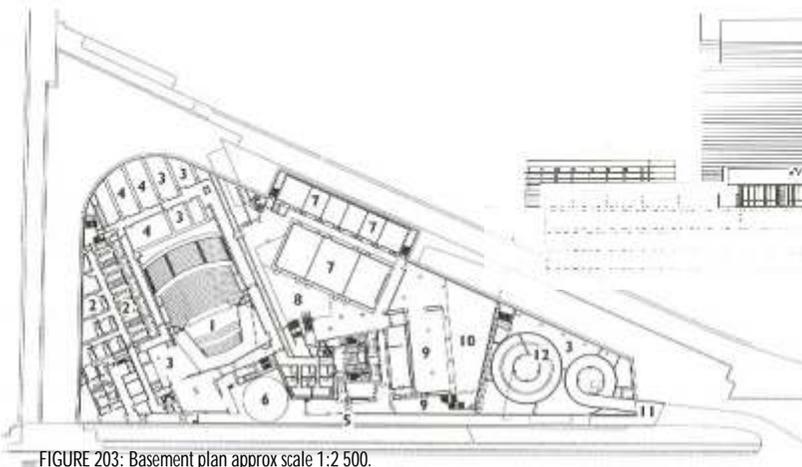


FIGURE 203: Basement plan approx scale 1:2 500.

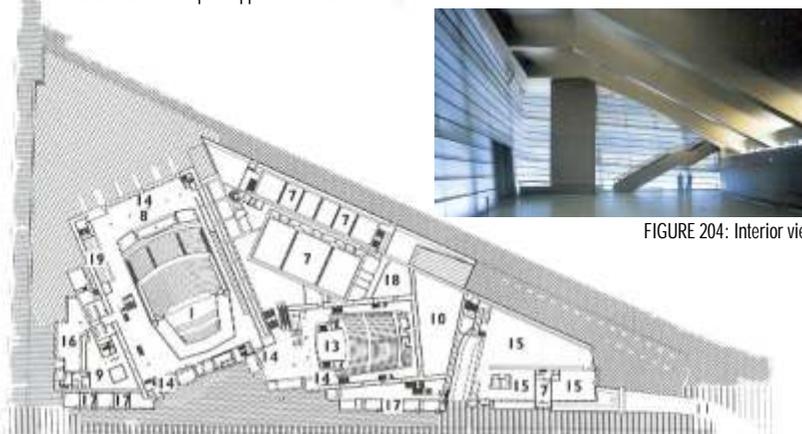


FIGURE 205: Ground floor plan.

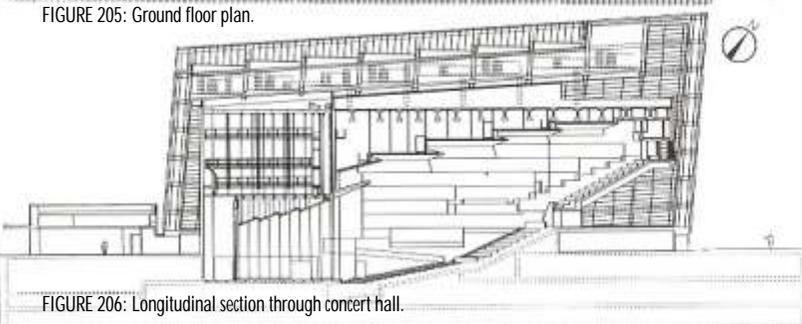


FIGURE 206: Longitudinal section through concert hall.



FIGURE 204: Interior view.

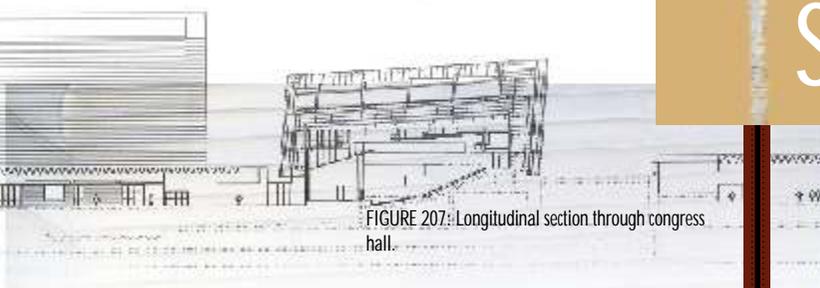


FIGURE 207: Longitudinal section through congress hall.



FIGURE 208: Curved cladding panels create a scalloped effect.



FIGURE 209: Inside the Auditorium.

FIGURE 203: Basement plan approx scale 1:2 500. (Ryan, 2000:48)

FIGURE 204: Interior view. (Cohn, 2000:222)

FIGURE 205: Ground floor plan. (Ryan, 2000:48)

FIGURE 206: Longitudinal section through concert hall. (Ryan, 2000:48)

FIGURE 207: Longitudinal section through congress hall. (Ryan, 2000:49)

FIGURE 208: Curved cladding panels create a scalloped effect. (Ryan, 2000:45)

FIGURE 209: Inside the Auditorium. (Ryan, 2000:49)

This project consists of a refurbishment and redo of an auditorium for theater productions. Looking up at the auditorium from the stage the impression is of graciously curvaceous richness. The rich green-black leather-covered seats curve gently down towards the center of the rows. You can pass seated neighbors and sit comfortably stretching your legs and enjoying the sensuous, robust leather. The whole auditorium was stripped to a shell and rebuilt with new air conditioning and acoustics. The auditorium seats 824 (eight hundred and twenty four) people. (Young, 1999:36)

In this precedent study one can look at the form of the auditorium in plan and section. It is however not the scale which Moreletapark has in mind. But it is useful to look at the handling of acoustic devices and stage design

## Center Stage

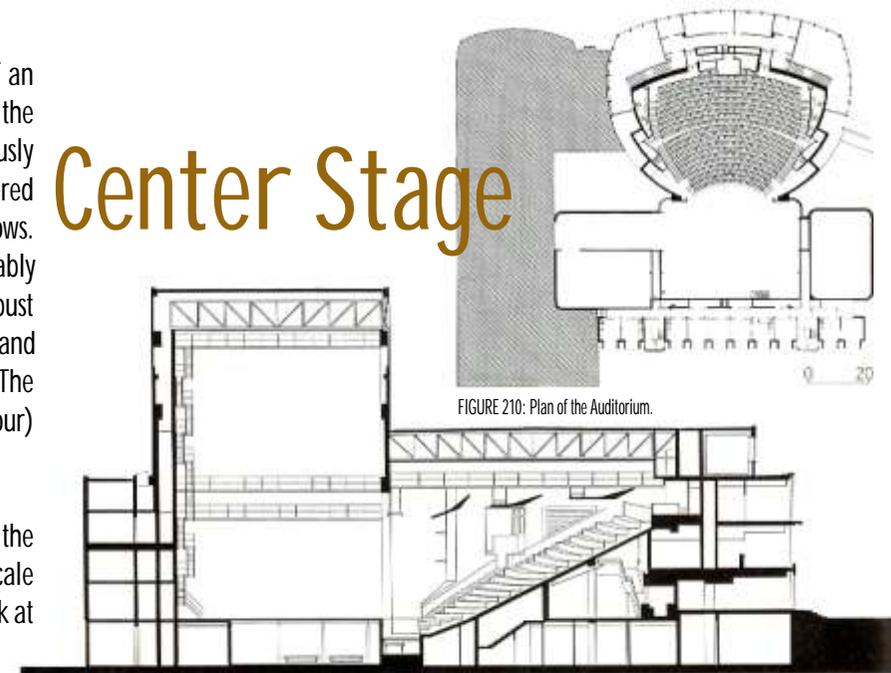


FIGURE 210: Plan of the Auditorium.

FIGURE 211: Section of the Auditorium.

121

FIGURE 210: Plan of the Auditorium. (Young, 1999:36)

FIGURE 211: Section of the Auditorium. (Young, 1999:36)

FIGURE 212: View from the stage towards the seating. (Young, 1999:36)



FIGURE 212: View from the stage towards the seating.

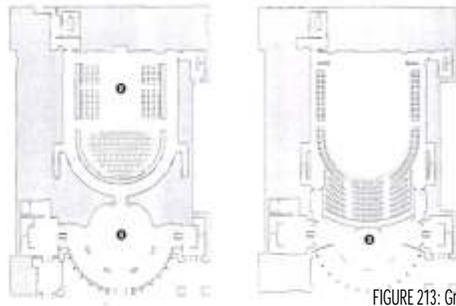


FIGURE 213: Ground floor and second floor plans.

## O'Reilly Theater

- 1 lobby
- 2 rehearsal space
- 3 theater
- 4 bar

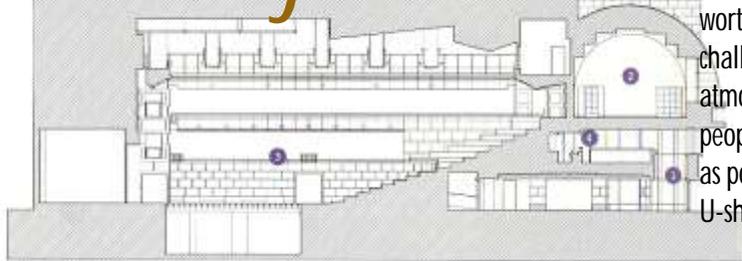


FIGURE 214: Section through the Auditorium.

This theater was complete in the year 2000. The auditorium accommodates 650 seats. The rake of the seats and the room's U-shape combine to make an embracing, intimate space with excellent sight lines. The stage is surrounded on three sides by the audience, blurring the space between actor and spectator. The array of seats on three levels also decreases the demands on circulation, thereby reducing the width of the corridors and stairways. (Davidson, 2001:130)

The layout of this auditorium is most interesting. It is very successful in bringing each spectator in close contact to the action on the stage. Although a very small theater, it is still worth learning from their layout. One of the greatest challenges in the Moreletapark project is to create an atmosphere of individual importance while eight thousand people are seated in one space. To bring each person as close as possible to the stage is not an easily solved problem. The U-shape works very well for this design.

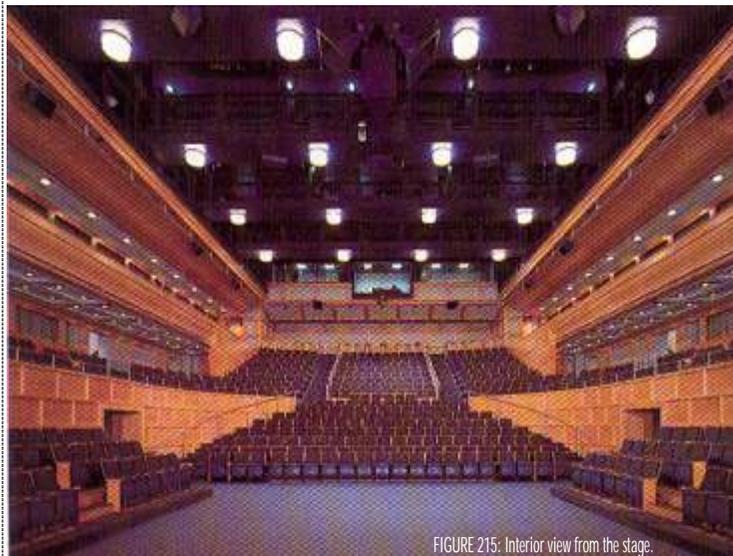


FIGURE 215: Interior view from the stage.

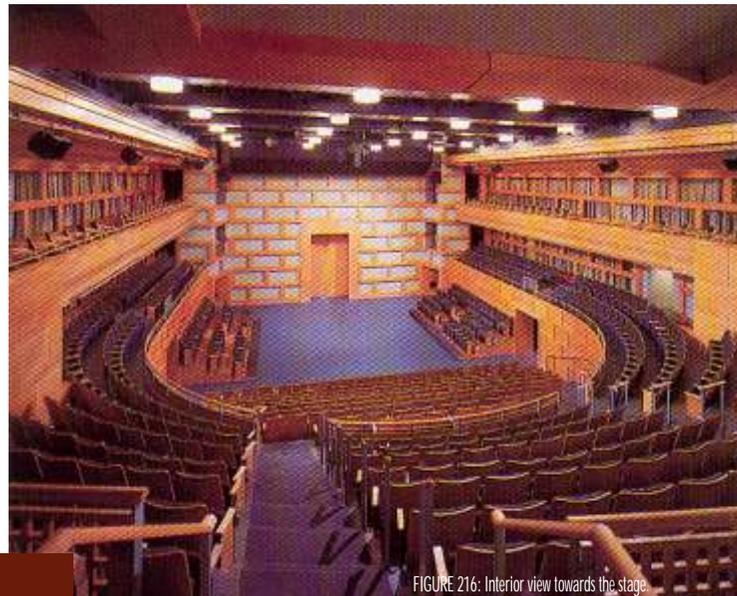


FIGURE 216: Interior view towards the stage.

FIGURE 213: Ground floor and second floor plans. (Davidson, 2001:129)

FIGURE 214: Section through the Auditorium. (Davidson, 2001:131)

FIGURE 215: Interior view from the stage. (Davidson, 2001:130)

FIGURE 216: Interior view towards the stage. (Davidson, 2001:130)

Surely everyone knows what a church should be and what it should look like! Clearly this is not true. One cannot deny the great theological changes during the last century and the history of the past nineteen hundred years that have left their mark on contemporary Church buildings. (Purdy, 1991:10)

Design development is a constantly and revolving exercise. Martin Purdy divides the strategy for Church design into three components:

1. Service - Places of Christian assembly should be designed, adapted or recorded so that they serve the life and work of the Church in a creative and efficient manner. A fitting architecture can be of immense help to the Christian community, and buildings have an effect and influence beyond their merely utilitarian function.
2. Standards - All building work should be carried out to the highest possible standards of design and construction. Far too many modern Churches have been built too cheaply, and without enough attention given to the symbolic meaning of Christian architecture.
3. Study - The process of determining the needs that make up the building programme, and assembling the resources to supply and service those requirements, demands careful study and analysis. Much of the ultimate success of a project depends upon the initial work put into briefing and scheme design.

Projects involving Church design should be theologically inspired, seeking their expression and meaning in a Christian understanding of the nature of God and His actions in the world. Schemes lacking this approach will always reveal incompleteness. The less tangible aspects of the design process, those issues involving signs, symbols and layers of subtle meaning, acquire supreme importance. The building must function in a practical and economic manner, but Church architecture should also express that exciting confrontation between the everyday world and the Divine. The visual and symbolic importance can for example be displayed in the movement of the sun throughout the day, the play of light through coloured glass and use of various symbols. Architecture is a three-dimensional art where surfaces, textures, materials and construction should integrate function and symbolism.

Whilst probably all Christians would agree that it is the people rather than the building which is the Temple of God, there is a growing desire for the meaning of sacred space and the sacramental attributes of objects and places. (Purdy, 1991:13)

## Principles of Protestant Church Design:

In the past it was always obvious that a congregation should have a Church building. Today many congregations meet in small groups and sometimes do not feel the need of having a large expensive building. However, there are a few reasons why a communal Church building is important:

1. To grow and share, the congregation must meet together in the Church to hear the Word and take part in the Sacraments.
2. For this assembly a building is necessary to comfortably accommodate the whole congregation.
3. The Church building is the centrum of life and service for the congregation.
4. As a place of encounter between God and man, this building should have a distinct nature; it should be different to secular buildings. (Barnard AC:2)

### Is there a definite Protestant Architecture?

No. At the first congress on Protestant Architecture in 1894 in Berlin, Theologians, Architects and Art Historians agreed that there does not exist a specific Protestant Church Architecture. At the meeting on Dutch Religion and Architecture in 1928, they realized that they have not succeeded in expressing their religious beliefs in the material form of architecture. The result was a kaleidoscope of styles and forms. (Barnard AC:3)

### Domus Dei Church as House of God:

With the coming of Jesus Christ to earth, the focus of the Temple has shifted. In the Old Testament the Temple was the living place of God. With the Son's salvation, God now lives in each believer; they become God's new Temple. Thus we understand that the Temple, today, is not a necessity to worship God. As previously stated at the beginning of this document, a Christian can be in sincere worship before God at any place, not necessarily a Church building. (Barnard AC:4)

### Domus Ecclesiae Church as House of the congregation:

After the coming of the Savior (Jesus) the building is seen as a place of meeting between God and His congregation and the members with one another. The building is not the point of focus, but the congregation serving God. This gives the building its special character. It is essential to note that the Church building is more than an ordinary building. The deeper symbolic meaning and message must be considered. This is a building with the purpose of serving the Lord, but is not profane in its nature. (Barnard AC:5)

### The exterior, interior and atmosphere of the building:

1. The exterior. The image of the building from the outside should portray its use. It is architecture with a definite message of the Good News. It is an image of God's majesty and truth. The form is a proclamation of the faith.
2. The interior. The layout of the interior should correspond to the message of the Gospel. The interior space should touch on all the senses. The combination of spatial dimensions and the use of natural light have a great influence on the user and the experience of the space. Colour and materials speak of meaning and symbolism. It is true that space can compress or free, improve concentration or distract and facilitate communication or not.
3. The atmosphere of the building. The atmosphere of this building must prepare one for the meeting with God. This atmosphere must flow from the Gospel. It should create a space where the believer can meditate, pray and sing praises to God. It is crucial to design such that modern man can relate. Jesus wants the Christians to hand Him their burdens. The Church is one of the places where the member must

release his/her burdens in the hands of the Almighty God. The atmosphere must facilitate the communication between God and man. (Barnard AC:8)

### The Congregation:

There must be no form of division between members. Church members must be able to see everyone where possible. There must be a sense of unity. The congregation meets around the preaching of the Word and the Sacraments. All members must clearly see the stage. Circulations from the stage to all parts where members are sitting are of vital importance. All members are partakers and not spectators. (Barnard AC:10)

### Contemporary thoughts:

Art in the Church has been discussed in a previous chapter in this document. It is important to emphasize that theology and art are two individual worlds but can and should work together in the Christian World. Art must never rule religion; it is a means of expression for theology. The present culture will and must have an influence on the architecture of the Church building. The people must relate to the form and style. However, the cultural principles must not dominate theology. Decoration on the building must be sensible and speak of faith. The building must personify the peace between God and His people. It must portray simplicity and the infinite depth of God's plan of Salvation.

### Use of Symbols:

The use of symbols must be clear in its form and meaning such that all members can understand it. Symbolic use must be applied with great care and thought. Too much will confuse the member and visitor. The cross still remains an exceptional and powerful symbol of the Christian faith. It may not be in the form of a crucifix because Christ is no longer on the cross but on the right hand of the Father. The use of symbols must not distract the user from the preaching of the Word, it should rather emphasize the message. (Barnard AC:13)

### In conclusion:

For this life, a Church building as meeting place for the children of God is most essential. But in the life hereafter, in the New Jerusalem, there is no temple. God Himself will be the temple. Thus, for life on earth, we must not cling to the earthly and material but worship God in all the glory we as humans can give. (Barnard AC:14)

# Accommodation Schedule

# Accommodation Schedule

## Entrances

**Description:**

It is the transition between the outside world and the interior where one finds God's Word and communion with other Christians.

**Function:**

The entrance is the first point of contact with the building. It should be distinct with wind lobbies outside the entrance doors. (T&A 1998:249) The impression of the entrance is very important, it should already direct the user's thoughts to religion. After entering, the way of movement should be clear, leading to reception and other facilities.

	Disabled: The door opening should be at least 750mm when in a 90 degree opening position. The door handle should be of the lever arm type at a height of 1 200mm above floor level. Any level change in floor finish due to a threshold may not exceed 15mm. (SABS SS4, 1990:153)	Facilities Required	Norms and standards
<p><b>Required Area:</b> Minimum door width 1 700mm, minimum door height 2 300mm. Provide proper access for disabled. (T&amp;A 1998:249)</p>	<p><b>Lighting:</b> Standard service illuminance of 150 lux is required; 1 200mm above floor level with warm or intermediate colour appearance lamps. Lighting should be used to create atmosphere and contribute to the appropriate mood. (T&amp;A 1998:413)</p>	Door	If the entrance is made of clear glass, it should be visible to anyone by means of clear markings. (SABS 0400, 1990:96) Glass installed in a door should be of safety glass and at least 6mm thick, if the surface is bigger than 1sqm. (SABS 0400 NN3.1, 1990:96)
<p><b>Requires Administration Area:</b> -</p>	<p><b>Ventilation:</b> -</p>	Transitional area in floor	Before entering into a building, attention is drawn by a transition in the floor finish. The floor finish must resist wear and tear, dirt accumulation and external elements like rain.
<p><b>Number of People:</b> Provide gathering spaces inside and outside as part of the normal exit route where people can naturally gather. (T&amp;A 1998:249) There need to be at least three to four entrances leading eventually to the auditorium. One or two entrances into the foyer will be adequate.</p>	<p><b>Circulation:</b> Provide access from the entrance area/foyer to the ablution facilities. (T&amp;A 1998:249)</p>		
<p><b>Equipment used:</b> It could double as a security door with the necessary installations.</p>	<p><b>Fire Regulations:</b> A room with a population of more than 25 people must have at least 2 exit doors opening in the direction of movement. (SABS TT17.1, 1990:183)</p>		

# Accommodation Schedule

## The Foyer

### Description:

A transitional space for waiting, receiving information, gathering and movement to other spaces.

### Function:

- The foyer space will house a number of functions.
1. This is the first point of reception and directions to other facilities.
  2. It is a very important information and gathering area for people before and after services or activities. Notice boards must be clearly visible.
  3. This is the first impression of the building and should be very inviting and comfortable.

<p><b>Norms and standards:</b></p>	<p><b>Facilities required:</b></p>	
<p>Must be suitable for writing, minimum height: 1 150mm, minimum width 300mm. (T&amp;A 1999:20-38)</p>	<p>Counter</p>	<p><b>Lighting:</b> Lighting should be good but not harsh such that the tranquil atmosphere is not disturbed. An average daylight factor of 1% is required. (T&amp;A 1998:416) The standard service illuminance should be 150lux with an intermediate to warm colour appearance. (T&amp;A, 1998:413)</p>
<p>People could be waiting for an appointment or for others to arrive to attend a Sunday service or lecture. Install comfortable furniture: chairs and coffee tables for magazines.</p>	<p>sitting and waiting area</p>	
<p>Minimum height: 700mm, minimum width: 600mm (T&amp;A, 1999:20-38)</p>	<p>Receptionist area</p>	<p><b>Ventilation:</b> Mechanical ventilation is normally required, and air distribution may be by ceiling or wall grilles. (T&amp;A, 1998:191)</p>
<p>Private automatic branch exchange system to receive all incoming calls at an operator who distributes it to the relevant people. Outgoing calls directly dialled.</p>	<p>telephone system</p>	<p><b>Circulation:</b> The foyer space will mainly act as circulation space, therefore the standard circulation sizes are exceeded already.</p>
<p>adequate circulation space around exhibition boards without opposing normal movement in the foyer. Exhibition boards positioned to be easily noticed and read.</p>	<p>exhibition area</p>	<p><b>Fire Regulations:</b> According to section TT28 of SABS 0400 (1990:189), any portal or foyer forming part of an escape route, must be the combined width of all escape routes that ends in that foyer, or 33% wider than the basis of the population that must be able to pass through, whichever one is the biggest. any exhibition that might take place in such a foyer must be fixed and should not protrude more than 150mm into the foyer (SABS 0400 1990:189)</p>

**Required Area:**  
1 700sqm if there are three entrances. 0.65sqm/seat (T&A 1998:183)

**Requires Administration Area:**  
40sqm.

**Number of People:**  
It ranges from 50 to 8 000 people moving through the foyer space into the auditorium or other spaces. It is highly unlikely that all 8 000 people will want to be inside the foyer space simultaneously.

**Equipment used:**  
Office equipment at reception; notice boards, seating furniture, exhibition spaces.

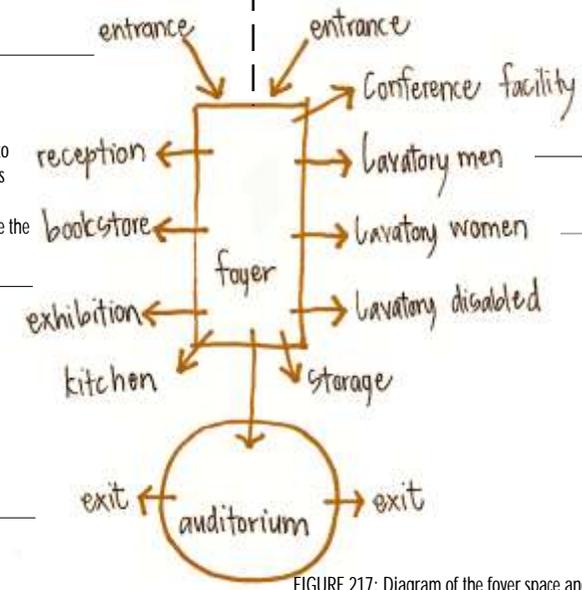


FIGURE 217: Diagram of the foyer space and related facilities extending from this space.

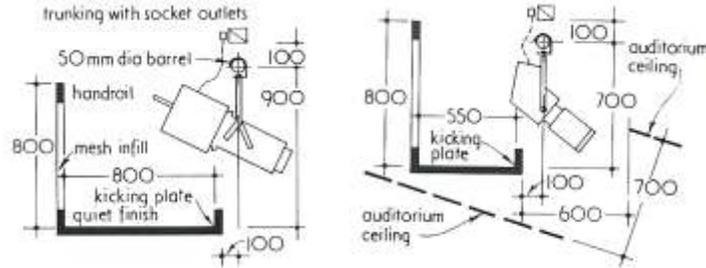


FIGURE 219: Auditorium lighting bridge using lanterns.

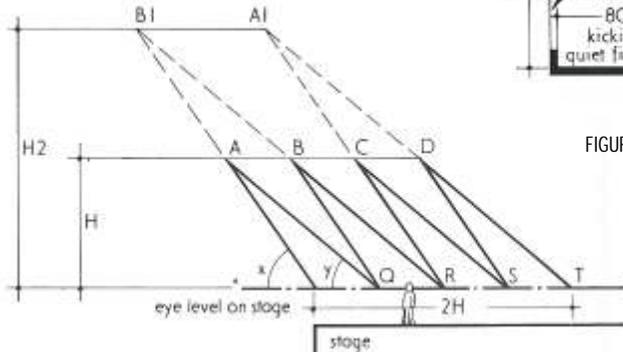


FIGURE 220: Locating theoretical positions of spot lights.

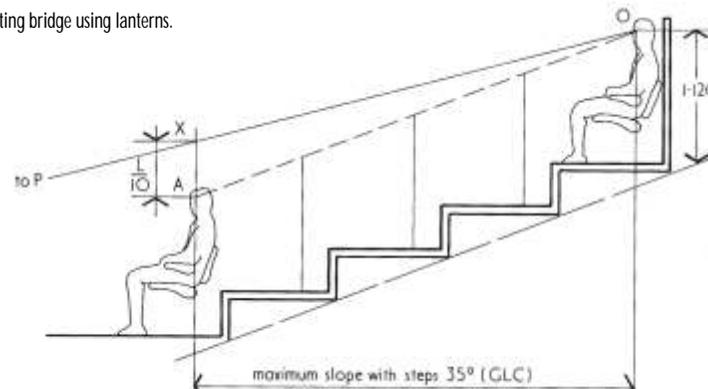


FIGURE 223: Mathematical method for finding balcony rake.

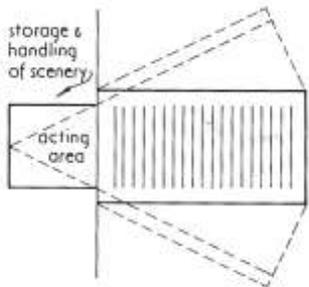


FIGURE 221: Proscenium stage, horizontal sight lines limiting the seating area.

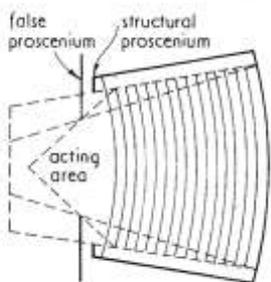


FIGURE 222: False proscenium further limits the acting area.

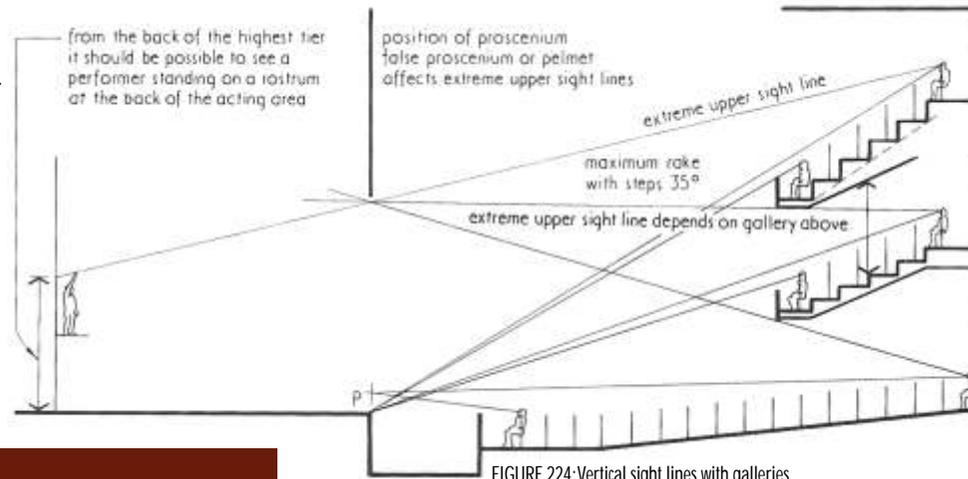


FIGURE 224: Vertical sight lines with galleries.

FIGURE 219: Auditorium lighting bridge using lanterns. (T&A 1998:192)

FIGURE 220: Locating theoretical positions of spot lights. (T&A 1998:192)

FIGURE 221: Proscenium stage, horizontal sight lines limiting the seating area. (T&A 1998:188)

FIGURE 222: False proscenium further limits the acting area. (T&A 1998:188)

FIGURE 223: Mathematical method for finding balcony rake. (T&A 1998:188)

FIGURE 224: Vertical sight lines with galleries. (T&A 1998:188)

# Accommodation Schedule

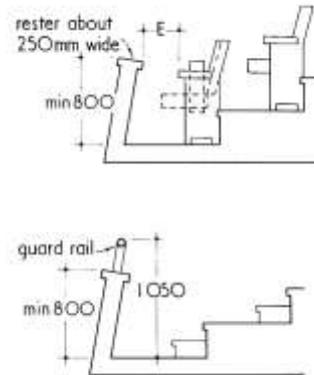


FIGURE 225: Sections through balcony fronts.

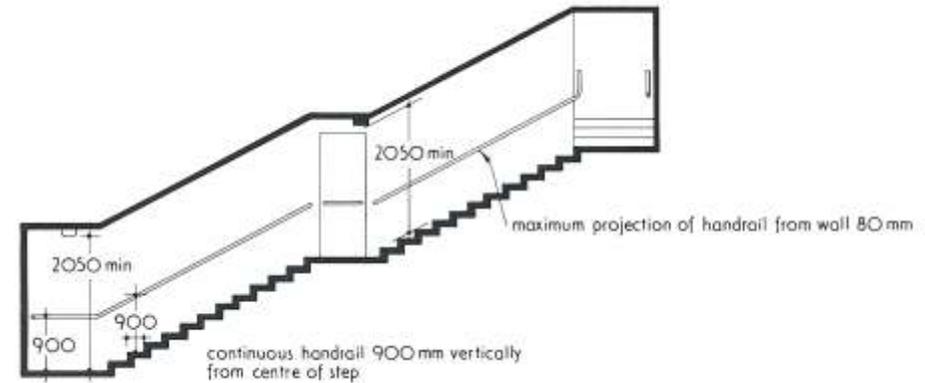


FIGURE 226: Section through an escape staircase.

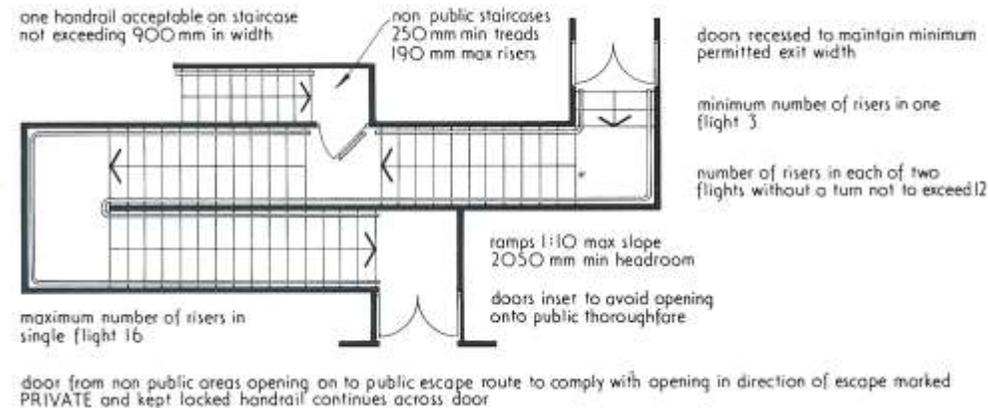


FIGURE 227: Plan of an escape staircase.

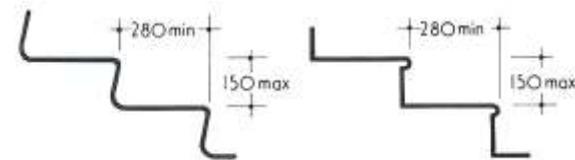


FIGURE 228: Two acceptable details for escape stairs.

FIGURE 225: Sections through balcony fronts. (T&A, 1998:189)

FIGURE 226: Section through an escape staircase. (T&A, 1998:192)

FIGURE 227: Plan of an escape staircase. (T&A, 1998:192)

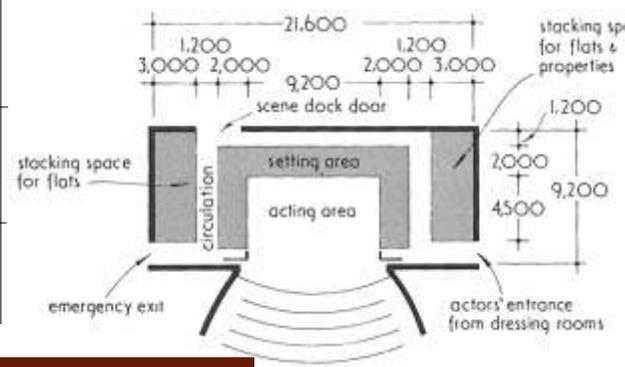
FIGURE 228: Two acceptable details for escape stairs. (T&A, 1998:192)

# Auditorium Stage

# Accommodation Schedule

**Norms and standards:**

**Facilities required:**

<p>Maximum headroom 2 500mm. (T&amp;A, 1998:1900)</p>	<p>stage basement</p>	<p><b>Lighting:</b> light sources directed at the speaker or actor should strike the actor's face at about 45 degrees above the horizontal. Lighting bridges above the auditorium are the best method of providing light from the direction of the audience. Refer to FIGURES 219 and 220.</p>	<p><b>Required Area:</b> 350sqm.</p>
<p>Lifts, operated by ropes and winches, screw jacks or hydraulic rams, can be used to vary the levels of all or part of the stage. (T&amp;A, 1998:1900)</p>	<p>stage lifts</p>	<p><b>Ventilation:</b> Cooling and heating, according to the season, is necessary to create comfortable environments for the people using the stage. Air from the auditorium will move onto the stage.</p>	<p><b>Requires Administration Area:</b> -</p>
<p>2 rooms, one for females and one for males. Provide for: clothes or hangers on hooks - 600mm centers; 1 250mm long hanging rail; door width 850-900mm; washbasin and long mirror 1 200mm x 600mm (T&amp;A, 1998:190) lighting levels of 150-200lux are required.</p>	<p>dressing rooms</p>	<p><b>Circulation:</b> there should be adequate circulation in the stage area, excluded from the acting area. Circulation space should be 35-50% of the stage area. Thus a minimum of 100sqm for circulation. (T&amp;A, 1998:183)</p>	<p><b>Number of People:</b> 20 -50.</p>
<p>Ambient sound level of 25dBA (T&amp;A, 1998:193) require lighting levels of 200-250lux.</p>	<p>Workshop</p>		
<p>For the storage of stage equipment and possibly music and drama instruments. This space could possibly be included within the basement. 3 Store rooms with sizes - 30sqm each. (T&amp;A, 1998:183)</p>	<p>Store rooms</p>		

**Equipment used:**  
lighting and sound systems. Computer screens. PC's.

**Description:**  
This is the area in the auditorium where the attention will be directed to. The pastor or speaker will speak from this area and other activities like song, dance and drama will take place on the stage.

**Function:**  
The size of the stage should not limit religious actions. The stage should accommodate a praise and worship band, the pastor or speaker, the choir, choir dancing and drama performances. It must also be used for secular activities like large governmental conferences, business meetings ext.

FIGURE 229: A stage with circulation routes. (T&A, 1998:190)

FIGURE 229: A stage with circulation routes.

# Accommodation Schedule

## Control Room

**Description:**

This is the room, looking onto the stage and auditorium, where the sound and lighting levels are controlled from.

**Function:**

The function of this room is to adjust sound and lighting levels to reach the desired effect. This space could possibly also be used for a recording studio.

**Required Area:**

25 - 30sqm (T&A, 1998:183).

**Lighting:**

Requires good lighting with the option of dimming. 150 - 200 lux.

Facilities Required:

Norms and standards:

Glass walls

Requires one direction tinted glass for the person inside to see the stage without the audience seeing him/her. Glass installed with a surface area greater than 1sqm, should be of safety glass and at least 6mm thick. (SABS 0400 NN3.1, 1990:96)

**Requires Administration Area:**

10sqm situated next to studio with entry directly into studio.

**Ventilation:**

Mechanical ventilation.

Work surface

Placement of equipment. The height of controls - 1100mm from floor. Work top height - 700mm from floor. Seat height - 450mm from floor. Work top depth of at least 600mm. (T&A, 1998:275)

**Number of People:**

1-5 people.

**Circulation:**

Movement between equipment must be easy and fast.

**Equipment used:**

Sound and lighting control boards, PC, telephone, sound and visual recording and editing equipment.

# Mother's Rooms

# Accommodation Schedule

<p><b>Norms and standards:</b></p>	<p><b>Facilities required:</b></p>	<p><b>Disabled:</b> The door opening should be at least 750mm when in a 90 degree opening position. The door handle should be of the lever arm type at a height of 1 200mm above floor level. Any level change in floor finish due to a threshold may not exceed 15mm. (SABS Ss4, 1990:153)</p>	
<p>a glass wall looking into the auditorium with a good view of the stage is required. The glass must be one direction glass and the walls should have a good sound insulation. The glass should be tinted safety galas with a thickness at least of 6mm if the area is 3,2sqm or more. (SABS, 1990:95,96)</p>	<p>Glass wall</p>	<p><b>Lighting:</b> 100 lux.</p>	<p><b>Required Area:</b> The total space can be divided into a number of different rooms. The total space should be 200sqm.</p>
<p>This surface will be used by mothers to tend to babies in changing nappies and feeding. The height from the floor should not exceed 1 100mm. The surface must be smooth.</p>	<p>Work top surface</p>	<p><b>Ventilation:</b> Mechanical ventilation. The temperature inside should be comfortable for small children and babies.</p>	<p><b>Requires Administration Area:</b> -</p>
<p>Install at the same height as the work top surface.</p>	<p>Handwash basin</p>	<p><b>Circulation:</b> The layout of the furniture must allow for the unpredictable movement of babies and toddlers.</p>	<p><b>Number of People:</b> -</p>
<p>According to user's choice and preference.</p>	<p>Furniture</p>		<p><b>Equipment used:</b> Work top surface, seating furniture and toys for children. Electronic sound system connection to hear the speaker inside the auditorium. A handwash basin will be a great contribution to the comfort of the mothers.</p>

**Description:**  
Mother's with small children utilize this room during services.

**Function:**  
To create an insulated space where young children can play unaffected by the service and the mothers still hear the message. These rooms must be suitable for other uses as well. Ex. Therapy and meetings in small groups.

# Accommodation Schedule

**Description:**  
Space for storage.

**Function:**  
Space for storing items used in the auditorium for services and other activities.

## Auditorium Storage rooms

**Required Area:**

15sqm with at least one wall set aside for shelves and the rest open for bigger equipment.

**Lighting:**

150 - 200lux.

Facilities Required:

Shelf

**Norms and standards:**

Maximum shelf height of 1 830mm above floor level with 455mm between shelve racks. (T&A, 1998:298)

**Requires Administration Area:**

-

**Ventilation:**

No mechanical ventilation required. Rely on infiltration.

**Number of People:**

-

**Circulation:**

-

**Equipment used:**

-

**Fire Regulations:**

-

# Conference/ Lecture Facility

# Accommodation Schedule

<p>Norms and standards:</p>	<p>Facilities required:</p>	<p><b>Disabled:</b> The door opening should be at least 750mm when in a 90 degree opening position. The door handle should be of the lever arm type at a height of 1 200mm above floor level. Any level change in floor finish due to a threshold may not exceed 15mm. (SABS SS4, 1990:153)</p>	
<p>For equipment and furniture. 10sqm.</p>	<p>Storage</p>	<p><b>Lighting:</b> Dimmer lights and black out (T&amp;A, 1998:128)</p>	<p><b>Required Area:</b> 1,5 sqm/person, thus 300sqm. allow sufficient space for alternative layouts. There should be an adjacent area for the audience to assemble before the meeting. (T&amp;A, 1998:128)</p>
<p>Comfortable standard seats.</p>	<p>Furniture</p>	<p><b>Ventilation:</b> Mechanical ventilation.</p>	<p><b>Requires Administration Area:</b> -</p>
		<p><b>Circulation:</b> -</p>	<p><b>Number of People:</b> 20 - 200 people.</p>
		<p><b>Fire Regulations:</b> Extinguishers should be clearly marked.</p>	<p><b>Equipment used:</b> Audio-visual equipment. Projector, TV. Movable writing board and furniture. (T&amp;A, 1998:128)</p>

**Description:**  
A conference room with all the necessary equipment for lectures and discussions.

**Function:**  
This is a facility for groups to meet either for lectures, organizational meetings or discussions.

# Accommodation Schedule

## Kitchen

**Description:**

This is a large multi-purpose kitchen.

**Function:**

It must serve various activities like catering for functions; serving tea and refreshments; making and storing food for the unprivileged ext. To calculate the areas required for the various activities in the kitchen, a value of 400 meals/day is used.

		Facilities Required:	Norms and standards:
<p><b>Required Area:</b> 200sqm.</p>	<p><b>Lighting:</b> The standard service illuminance should be 500lux with intermediate or warm colour appearance and luminaires positioned relative to the working surface. (T&amp;A, 1998:413)</p>	Preparation area	Work top height- 900mm. Sink top height - 900mm. Wall bench width - 600 to 750mm. Island bench and table width - 900 or 1050mm. Length of work area within convenient reach - 1 200 to 3 000mm. Length for two people working together is 2 400 - 3 000mm. comfortable height when seated at 430mm is 700mm. (T&A, 1998:171) An area of 25sqm is required (T&A, 1998:170).
<p><b>Requires Administration Area:</b> 10sqm.</p>	<p><b>Ventilation:</b> -</p>	Storage area	With the storage of containers, the shelf heights and widths should approximate to heights of food containers. The limit for maximum reach is 1 950mm and heavy and frequently items should not be placed above 1 500mm. Refer to FIGURE . (T&A, 1998:171) Deep freeze stores at about 18 degrees Celsius are ideal for prolonged storage of frozen food, it may be purpose built and always be opened from within.
<p><b>Number of People:</b> 1 to 20 persons.</p>	<p><b>Circulation:</b> Spaces between equipment and fittings should at least be between 1 200mm and 1 500mm. (T&amp;A, 1998:171)</p>	Goods access	External vehicular circulation for deliveries and refuse removals allow for space outside kitchen for the temporary storage of refuse. These are 0,75 - 0,85 meters cubed containers. (T&A, 1998:171)
<p><b>Equipment used:</b> Cooking, washing, cleaning and storage equipment.</p>	<p><b>Fire Regulations:</b> Fire extinguishers should be clearly visible.</p>	Was-up area	20sqm is required for the wash-up area.
		Cooking area	An area of 40sqm is required for cooking. Equipment installed according to user's needs. (T&A, 1998:170,173)

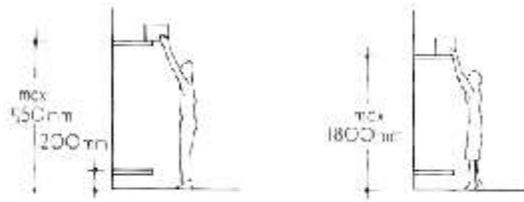


FIGURE 230: Height for storage shelves, limits for maximum reach.

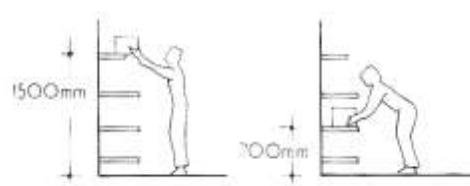


FIGURE 231: Convenient reach for heavy or frequently used items.

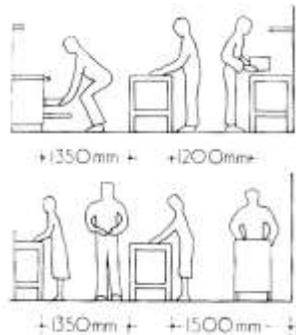
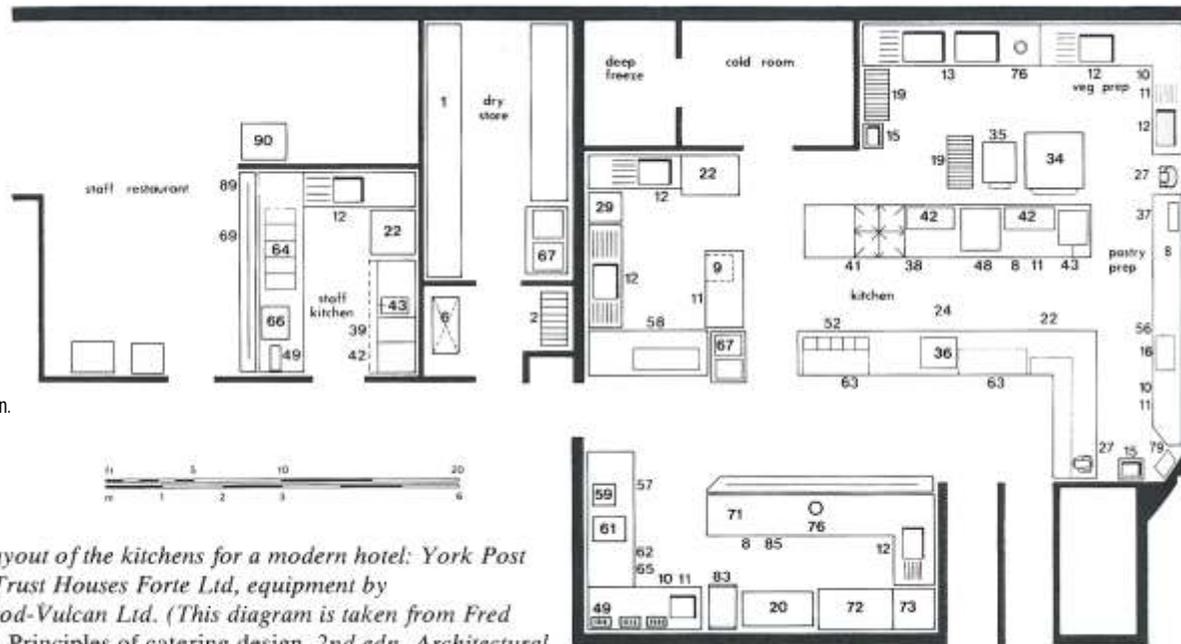


FIGURE 232: Measurements for adequate circulation.



**20.20** Layout of the kitchens for a modern hotel: York Post House, Trust Houses Forte Ltd, equipment by Moorwood-Vulcan Ltd. (This diagram is taken from Fred Lawson, Principles of catering design, 2nd edn, Architectural Press, 1978. Numbers are explained in the key below and are taken from a system further developed in the book.)

- |                                       |                                      |   |  |
|---------------------------------------|--------------------------------------|---|--|
| 1 shelving                            | 22 refrigerator                      | 48 griddle plate                        | 66 tray stand                            |
| 2 vegetable racks                     | 24 deep freeze cabinet               | 49 toaster                              | 67 ice cream conservator                 |
| 4 storage bins                        | 25 potato peeler                     | 52 hot cupboard with bain-marie top     | 69 tray rail                             |
| 6 mobile racks                        | 27 mixing machine                    | 56 refrigerated under-cupboard          | 71 receiving table for dirty dishes      |
| 8 work table or bench for preparation | 29 chopping block                    | 57 refrigerated cupboard with doleplate | 72 stacking table for clean dishes       |
| 10 work bench with waste bin          | 33 pasty oven or pizza oven          | 58 refrigerated display cabinet         | 73 semi-automatic dishwashing machine    |
| 11 work top with shelves              | 34 forced-air convection oven        | 59 milk dispenser                       | 76 waste disposal unit or scraping point |
| 12 single sink and drainer            | 35 steaming oven                     | 61 coffee unit                          | 79 refuse bins                           |
| 13 double sink unit                   | 36 microwave oven                    | 62 unheated counter unit                | 83 glass storage racking                 |
| 15 wash hand basin                    | 37 boiling top                       | 63 counter with infra-red lamps over    | 85 glass washing machine                 |
| 16 marble-topped bench                | 38 boiling top with open top burners | 64 counter display cabinet              | 89 chilled water dispenser               |
| 19 pot rack                           | 39 boiling top with solid top        | 65 compressor or boiler under counter   | 90 beverage vending unit                 |
| 20 trolley                            | 41 oven range with boiling top       |   |  |
| 21 mobile tray racks                  | 42 grill or salamander               |   |  |
|                                       | 43 deep fat fryer                    |   |  |

FIGURE 233: An example of a kitchen layout.

FIGURE 230: Height for storage shelves, limits for maximum reach. (T&A, 1998:171)

FIGURE 231: Convenient reach for heavy or frequently used items. (T&A, 1998:171)

FIGURE 232: Measurements for adequate circulation. (T&A, 1998:171)

FIGURE 233: An example of a kitchen layout. (T&A, 1998:172)

# Accommodation Schedule

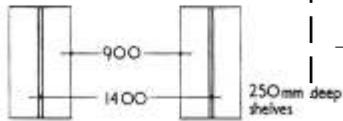
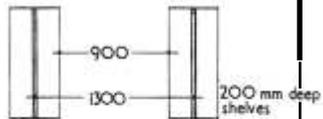
## Bookstore

### Description:

A Christian bookstore with literature, music and visual media.

### Function:

To sell Christian books, music and videos to the congregation and visitors during the week and on Sundays.



139

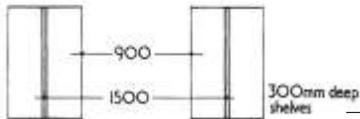


FIGURE 234: Aisle widths between book shelves. (T&A, 1998:297)

FIGURE 235: Bookshelf height. (T&A, 1998:132)

**Required Area:**  
100sqm.

**Requires Administration Area:**  
10sqm.

**Number of People:**  
1 - 50 people.

**Equipment used:**  
PC, telephone, cash till, credit card system, CD players, TV.

**Disabled:**  
The door opening should be at least 750mm when in a 90 degree opening position. The door handle should be of the lever arm type at a height of 1 200mm above floor level. Any level change in floor finish due to a threshold may not exceed 15mm. (SABS SS4, 1990:153) The aisles between the shelves must at least be 1 200mm for wheelchair access.

**Lighting:**  
300lux where reading takes place. Use intermediate or warm colour appearance lamps. (T&A, 1998:414)

**Ventilation:**  
Natural or mechanical ventilation.

**Circulation:**  
Aisles between display shelves should at least have a width of 1 300mm up to 2 250mm. (T&A, 1998:297)

**Fire Regulations:**  
Extinguishers must be clearly visible. Escape routes must be clearly marked.

Facilities Required:

Shelves

Display counter

Cash counter

Norms and standards:

For book shelves the maximum height is 2 100mm with the bottom 300mm not used for display. (T&A, 1998:132)

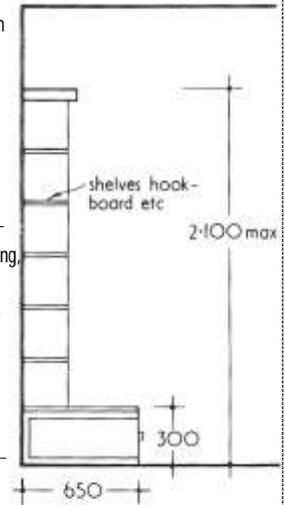


FIGURE 235: Bookshelf height.

Must be suitable for easy viewing, minimum height: 1 150mm, minimum width 300mm. (T&A 1999:20-38)

Must be suitable for writing, minimum height: 1 150mm, minimum width 300mm. (T&A 1999:20-38)

# Chapel

**Description:**

Small Chapel for more intimate services.

**Function:**

Used for weddings, funerals and other teaching activities.

**Norms and standards:**

Facilities required:

**Disabled:**  
The door opening should be at least 750mm when in a 90 degree opening position. The door handle should be of the lever arm type at a height of 1 200mm above floor level. Any level change in floor finish due to a threshold may not exceed 15mm. (SABS SS4, 1990:153) There should be space for two wheelchairs close to an exit route.

Storage space available when required.

Small store room

**Lighting:**  
100lux standard service illuminance with intermediate or warm lamps. (T&A, 1998:413)

**Required Area:**  
1,5 sqm/person thus 300sqm

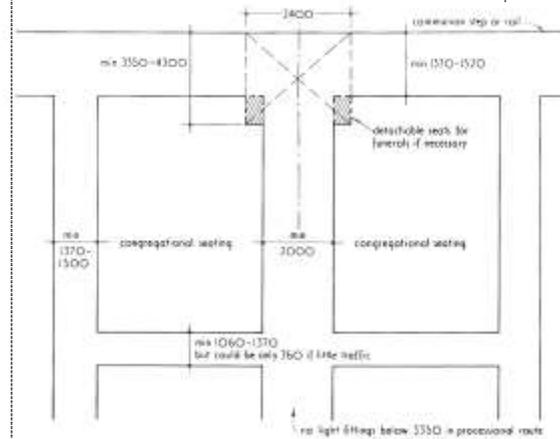


FIGURE 236: Aisle widths in the Chapel.

**Ventilation:**  
Natural ventilation.

**Requires Administration Area:**  
-

**Circulation:**  
aisle widths should at least be 2 000mm up to 3 350mm. (T&A, 1998:250) See FIGURE .

**Number of People:**  
250 persons maximum.

**Fire Regulations:**  
Escape routes in a building should be clearly marked. (SABS 0400 TT29, 1990:189)\_emergency routes must be independent from one another. The distance to the emergency door may not exceed 45m and should be along a corridor or aisle.(SABS 0400 TT16.4, 1990:181) the exit door should open in the direction of movement. (SABS 0400 TT20.1, 1990:183) the width of an escape route should be at least 1 800mm. the escape route must have for its full length a headspace of 2 000mm. (SABS 0400 TT20, 1990:184) according to the surface area, 2 fire extinguishers are required. (SABS 0400 TT37.4, 1990:193)

**Equipment used:**  
Sound system, podium, Baptist font.

# Accommodation Schedule

## Memorial Wall

**Description:**

Wall in memory of the dead, outside the church building.

**Function:**

For relatives to have a physical structure reminding them of their loved one who passed away.

Disabled:

Facilities Required:

Norms and standards:

**Required Area:**  
500sqm.

**Lighting:**  
Lighting to facilitate use at night. It should create atmosphere.

**Requires Administration Area:**  
-

**Ventilation:**  
-

**Number of People:**  
-

**Circulation:**  
Unobstructed movement around the wall. Walk ways on sides must be at least 2 000mm wide.

**Equipment used:**  
-

**Fire Regulations:**  
-

# Accommodation Schedule

## Prayer Garden

<p>Norms and standards:</p>	<p>Facilities required:</p>	<p><b>Disabled:</b> Sloping walkways should not exceed a slope of 1:12; must have a landing of 1 200mm in length for every 1 500mm rise. The walkway must be provided with a handrail if it is longer than 600mm. The handrail should be at a height of 850mm to 1 000mm above the sloping walkway. (SABS 0400 Ss2, 1990: 152)</p>	
		<p><b>Lighting:</b> Outdoor lights positioned to lit the landscape to accommodate evening use.</p>	<p><b>Required Area:</b> -</p>
		<p><b>Ventilation:</b> -</p>	<p><b>Requires Administration Area:</b> -</p>
		<p><b>Circulation:</b> -</p>	<p><b>Number of People:</b> -</p>
		<p><b>Fire Regulations:</b> -</p>	<p><b>Equipment used:</b> Paved surfaces and outdoor furniture. Information boards describing the various biblical plants.</p>

**Description:**  
Landscaping in the form of biblical plants and benches.

**Function:**  
To create public and private spaces where groups or individuals can pray.

# Biblical Plants

## CLASSIFICATION OF BIBLICAL PLANTS

Moreletapark NG Church wants to implement Biblical plants into the landscaping surrounding the Church building. These plants would then create spaces for prayer and contemplation, thus a prayer garden. On this page is a list of Biblical plants. Not all of them has been discussed. In the following pages some has been studied in terms of symbolism and Biblical uses. This knowledge will enrich the design and placement of these different plants around the building. It is important for the people then to understand the reasoning behind the choice of plants and their positioning, therefore information boards in-between the plants are essential.

### 1. Cereals

- a. Barley (Gramineae)
- b. Beans (Leguminosae)
- c. Lentils (Leguminosae)
- d. Millet (Gramineae)
- e. Wheat (Graminae)

### 2. Fruit trees

- a. Almond (Rosaceae)
- b. Apple (Solanaceae)
- c. Fig (Moraceae)
- d. Mulberry tree (Moraceae)
- e. Nuts (Anacardiaceae; Oleaceae)
- f. Olive tree (Eleagnaceae; Oleaceae)
- g. Palm tree (Palmaceae)
- h. Pomegranate (Punicaceae)
- i. Sycamore (Moraceae)
- j. Vine (Vitaceae)

### 3. Vegetables and gourds

- a. Cucumber (Cucurbitaceae)
- b. Endive (Compositae)
- c. Garlic (Liliaceae)
- d. Leek (Leguminisae, Liliaceae)
- e. Onion (Liliaceae)

### 4. Flax (Liniaceae)

### 5. Flavors and condiments

- a. Anise (Umbelliferae)
- b. Fitches (Ranunculaceae)
- c. Mint (Labiatae)
- d. Mustard (Cruciferae)
- e. Saffron (Iridaceae)
- f. Salt (Chenopodiaceae)

### 6. Balms, drugs and incense

- a. Aloes (Liliaceae)
- b. Balm (Zygophyllaceae)
- c. Cane, calamus, sweet cane, sweet calamus (Gramineae)
- d. Cassia (Compositae)
- e. Cinnamon (Lauraceae)
- f. Galbanum (Lauraceae)
- g. Henna (Lythraceae)
- h. Myrrh (Bursaraceae, Cistaceae)
- i. Spikenard, nard (Valerianaceae)
- j. Spices (Leguminosae)

### 7. Costly timbers

- a. Algum, almug timber (Leguminosae)
- b. Ebony (Ebenaceae)
- c. Gopher wood (Pinaceae)

### 8. Forest trees and shrubs

- a. Acacia tree, acacia wood (Loranthaceae)
- b. Bay tree (Lauraceae)
- c. Box tree (Buxaceae)
- d. Bush, thornbush (Compositae)
- e. Cedar (Pinaceae)
- f. Fir, fir tree (Pinaceae)
- g. Juniper (Leguminosae)
- h. Laurel (Lauraceae)
- i. Hyssop (Labiatae)
- j. Mallow (Chenopodiaceae)
- k. Myrtle (Myrtaceae)
- l. Oil tree, wild olive (Elaeagnaceae)
- m. Oak (Fagaceae)
- n. Pine (Pinaceae)
- o. Storax tree (Styracaceae)
- p. Terebinth, turpentine tree (Anacardiaceae)
- q. Willow (Salicaceae)

### 9. Lilies and roses (Amaryllidaceae, Apocynaceae, Iridaceae, Liliaceae, Nymphaeaceae, Ranunculaceae, Rosaceae)

### 10. Reeds and rushes

- a. Cattail (Typhaceae)
- b. Flag, meadow, reeds (Butomaceae)
- c. Reeds (Graminae)
- d. Rush, papyrus, bulrushes (Cyperaceae)

### 11. Thorns and thistles

- a. Brier (Rosaceae)
- b. Thistle (Compositae)
- c. Thorn (Compositae)

### 12. Weeds and nettles

- a. Cockle (Caryophyllaceae)
- b. Nettle (Acanthaceae, Cruciferae, Urticaceae)
- c. Tares (Gramineae)
- d. Wheel, rolling Thing, whirling dust (Compositae, Cruciferae)

### 13. Wormwoods and poisons

- a. Bitter herbs (Rutaceae)
- b. Gall, hemlock (Cucurbitaceae)
- c. Wormwood (Compositae)

### 14. Hedges and fences

- a. Brambles, thorns (Rosaceae)

### 15. Other plants

- a. Caper (Capparidaceae)
- b. Mandrake (Solanaceae) (Tenny, 1980:564)

### Wheat

Wheat forms a crucial part of the diet of the people. The grains are sowed when the first rains are coming down in Autumn. It is harvested at the beginning of the summer. (Alexander, 1977) Genesis 41:49. 'Joseph stored up huge quantities of grain, like the sand of the sea; it was so much that he stopped keeping records because it was beyond measure.' (NIV, 1985: 69)

The Triticum wheats are found in scripture as corn. (Genesis 40:2, Exodus 29:2) There is winter and spring sown wheat. Wheat has been called the "staff of life". (Tenney, 1980:568)



FIGURE 237: Wheat.

### Myrtles (*Myrtus communis*)

This plant is found in the undergrowth of Palestine. The glossy, ever green leaves have a lovely aroma with an abundance of white flowers. Used to build huts with. (Alexander, 1977) Nehemiah 8:15. 'Go out into the hill country and bring back branches from olive and wild olive trees, and from Myrtles...' (NIV, 1985:706)

Myrtle is a symbol of peace and justice to the Jews. (Tenney, 1980:568)



FIGURE 238: Myrtles.

### The Almond (*Prunus amygdalus*)

The flowers are white or light pink in Palestine. Its flowers come early in the year and is the first fruit tree to bud. It shows the turning of seasons even before it can be felt in the air. Similarly is the Word of God spoken through the Prophets. Their words are only a sign of what God is about to let happen. The almond tree-branch had to be a comfort to Jeremiah if the people did not want to listen to him. (Alexander, 1977) Jeremiah 1:11,12. 'The word of the Lord came to me: "What do you see, Jeremiah?" I see the branch of an almond tree.' I replied. "You have seen correctly, for I am watching to see that My word is fulfilled." (NIV, 1985: 1120)

In the Old Testament not anyone can enter the presence of the Lord in His Temple. The Lord declares that only the priests are fit for this job. The Lord was about to give a sign to the Israelites which tribe will be the priests. From each tribe a staff was placed before the Altar. Numbers 17:8 'The next day Moses entered the Tent of the Testimony and saw that Aaron's staff, which represented the house of Levi, had not only sprouted but had budded, blossomed and produced almonds.' (NIV, 1985: 216) If the Almond bud while all the other trees are still void of leaves, it symbolizes that God's promises will come to pass when one doesn't expect it. (Vosloo & J v Rensburg, 1993)

This tree reaches a height of 20 feet (6-7 meters) (Tenney, 1980:576).



FIGURE 239: Almond

# Biblical Plants

## Papyrus (*Cyperas papyrus*)

This is the name of the paper used in the ancient world and the plant from which it is made. It still grows in the north of Palestine and sometimes along the Nile in Egypt. The triangular stems were cut and packed in layers and compressed to form paper. Many parts of the Bible were originally written on papyrus. (Alexander, 1977:99)



FIGURE 240: Papyrus

## The Incense Tree (*Boswellia*)

This plant has a thin easy strippable bark. The stem is cut and the resin tapped and sold as incense. This plant grows in Africa, South Arabia and India. The Magi from the East brought baby Jesus gifts of gold, incense and myrrh. (Matthew 2:11)



FIGURE 241: The bark of the Incense Tree.

This plant is found in the undergrowth of Palestine. The glossy, ever green leaves have a lovely aroma with an abundance of white flowers. Used to build huts with. (Alexander, 1977:99)



FIGURE 242: Coriander.

## Coriander (*Coriandrum sativum*)

This is a one year plant reaching a height of 30 - 60 cm. The Israelites knew this plant because they compared it to the manna they received in the desert. Exodus 16: 31. 'The people of Israel called bread manna. It was white like coriander seed and tasted like wafers made with honey.' (NIV, 1985: 111) It has medicinal uses and is suitable for cooking. (Alexander, 1977:99)



FIGURE 243: Rue.

#### Rue (*Ruta graveolens*)

This is a small shrub reaches a height of 60 cm. The grey-green leaves are rich in pleasant smelling oil and is used as an antiseptic and fragrant. Jesus reprimands the Pharisees giving a tenth of Rue but neglect the love of God. (Alexander, 1977) Luke 11:42. 'Woe to you Pharisees. Because you give God a tenth of your mint, rue and all other kinds of garden herbs, but you neglect justice and the love of God. You should have practiced the latter without leaving the former undone.' (NIV, 1985:1562)



FIGURE 244: Yellow Chrysanthemum.

#### Yellow Chrysanthemum (*Chrysanthemum coronarium*)

This is one of the many colourful flowers of Palestine. (Alexander, 1977) Matthew 6: 28. 'And why do you worry about clothes? See how the lilies of the field grow. They do not labor or spin. Yet I tell you that not even Solomon in all his splendor was dressed like one of these.' (NIV, 1985: 1452)

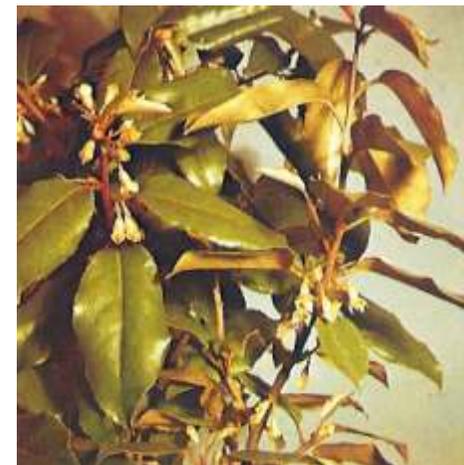


FIGURE 245: Olive Tree.

#### The Olive Tree (*Elaeagnus anustifolia*)

This is one of the most important trees giving a harvest in Palestine. The olives were eaten after being prepared. But the oil pressed from the fruit was even more important. The oil was used for cooking and as fuel for lamps. Sometimes it was also used as an ointment. It becomes symbolic of the ointment of the Holy Spirit. (Alexander, 1977) It is a deciduous tree and can reach a height of 20 feet (6-7 meters). It bears yellow flowers and fruit. (Tenney, 1980:568)

FIGURE 243: Rue. (Alexander 1977:99)

FIGURE 244: Yellow Chrysanthemum. (Alexander, 1977:99)

FIGURE 245: Olive Tree. (Hay &amp; Synge, 1991:1569)

# Biblical Plants



FIGURE 246: Flax.

## Flax (*Linum usitatissimum*)

Linen is produced from the flax plant with the blue flowers. It grows to have a height of 45 cm. The plant is drawn from the ground and the fibers in the stem separated by leaving it in water. The fibers are also used for making rope, nets and lamp pits. (Alexander, 1977)

Linseed oil is made from the seeds. It is the main vegetable material used for cloth in Biblical days. Three types of linen were made from flax: a coarse linen (Ezekiel 9:2), a superior type of linen (Exodus 39:27) and a very fine beautiful linen (1 Cronicle 15:27). Linen was part of the priestly clothing (Exodus 28 and Leviticus 6:10). The armies in heaven were clothed in fine linen. (Revelation 19:14) (Tenney, 1980:572)



FIGURE 247: Pomegranate.

## The Pomegranate (*Punica granatum*)

The red flowers of the Pomegranate forms a strong contrast against the dark green leaves. The fruit is round with a hard yellow shell and of similar size to oranges. Inside one finds numerous seeds. The robe of the High Priest is embroidered with images of pomegranates. (Alexander, 1977) Exodus 28:33. 'Make pomegranates of blue, purple and scarlet yarn around the hem of the robe, with gold bells between them.' (NIV, 1985: 129)

It is also used to decorate the pillars in the Temple of Solomon. 1 Kings 7:20. On the capitals of both pillars, above the bowl shaped part next to the network, were the two hundred pomegranates in rows all around.' (NIV, 1985: 483)

Pomegranates were certainly promised by God to His people (Deuteronomy 8:8), and were regarded as a definite blessing. It can reach a height of 30 feet (10 meters) (Tenney, 1980:575)

FIGURE 246: Flax. (Alexander, 1977:99)

FIGURE 247: Pomegranate. (Alexander, 1977:99)

FIGURE 248: The Vine. (Alexander, 1977:99)

## Vine (*Vitis vinifera*)

This is a shrub with long shoots cultivated in vineyards in the warmer regions. It became a symbol of the Hebrew nation and reminded of the promised land. It was eaten as fresh fruit or dried as raisins. Wine was pressed from the grapes with their feet and then left to ferment in bags made from skins. (Alexander, 1977) The first miracle Jesus did was to change water into wine at the wedding in Cana. John 2:7-9. 'Jesus said to the servants: "Fill the jars with water", so they filled them to the brim. Then he told them: "Now draw some out and take it to the master of the banquet." They did so, and the master of the banquet tasted the water that had been turned into wine.' (NIV, 1985: 1597)



FIGURE 248: The Vine.

### The Cedar Tree of the Lebanon (*Cedrus libani*)

This is a big cone bearing tree endemic to the Lebanon mountains. Today very few remains. In the time of the Old Testament the wood was used in Solomon's Temple. (Alexander, 1977) 1 Kings 5:6. 'So give orders that cedars of Lebanon be cut for me.' (NIV, 1985: 479)



FIGURE 249: The Cedar.

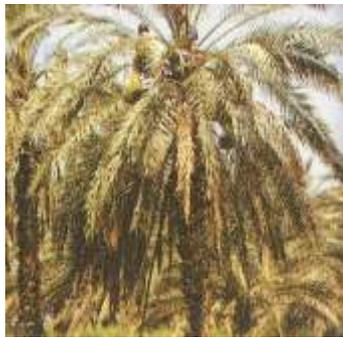


FIGURE 250: Date palm.

### The Date Palm (*Phoenix Dactylifera*)

It grows in the warmer regions of Palestine and around the oasis in Sinai. It is a tall palm tree with a cluster of leaves at the top. The form of the leaves are used to decorate the capitals of the Egyptian columns. The palm became the national symbol of Israel. The people throw palm leaves on the ground when Jesus rides on the Donkey through Jerusalem. (Alexander, 1977)

Song of Songs 7:8. 'I said: "I will climb the palm tree, I will take hold of its fruit."' (NIV, 1985: 1011) almost every part of the date palm is valuable: the fruit, the stones, the leaves, the trunk, the crown and the branches. Tamar, the Hebrew name of the palm tree is often given to girls, because this stood for elegance and grace. (Tenney, 1980:573)

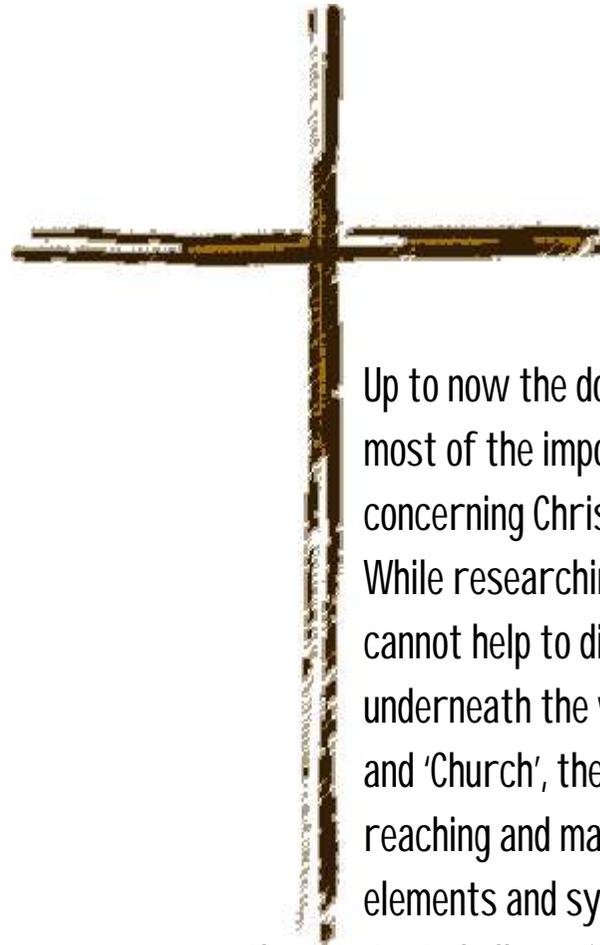
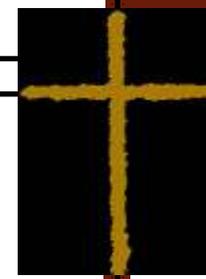


FIGURE 251: Fig.

### The Fig tree (*Ficus carica*)

This is an important fruit in the Bible. Fig trees are often next to the road close to vineyard and houses. The leaves develop early to pronounce spring. The fruit ripens in summer. This tree is used numerous times in parables told by Jesus. (Alexander, 1977) Matthew 21:18 - 19. 'Early in the morning, as he was on his way back to the city, he was hungry. Seeing a fig tree by the road, he went up to it but found nothing on it except leaves. Then he said to it: "May you never bear fruit again!" Immediately the tree withered.' (NIV, 1985: 1472)

The fruit was considered part of the staple diet of the Israelites. (Micah 4:4). Even at the beginning of time, Adam and Eve tried to make garments or girdles with fig leaves. (Tenney, 1980:573)



Up to now the document touches on most of the important aspects concerning Christian Church design. While researching this topic, one cannot help to discover that underneath the words 'Christianity' and 'Church', there lay hidden, a far-reaching and marvelous richness of elements and symbols.

Now the greatest challenge is about to unfold...to convert this amazing knowledge into a visual representation glorifying the Almighty God.

# Dreaming Design

When Solomon had completed the Temple he prayed that God would accept it.

1 Kings 9:2,3 "I have heard the prayer and plea you have made before Me; I have consecrated this temple, which you have built, by putting My name there forever. My eyes and My heart will always be there." (NIV, 1985:481)

God is a Father of Love and Abundance. He longs for fellowship with his children, His church. The Church building is where God's children meet for worship. This is indeed a special place. The designer is convinced that the appearance and experience of this development should be extraordinary. People must be aware of the glory and greatness of God upon entering the site and using the buildings. The architecture must reflect the Creator of the universe. This is indeed an impossible task for a human. No human will ever fully understand the true greatness and capacity of God. It is enough to know that He is ultimately in control and the only giver of ability and workmanship. God used Bezalel and Aholiab to construct the Tabernacle. The Spirit of God filled these two gifted men with the necessary wisdom and craftsmanship. They could not have done it without the guidance of the Spirit. God gives each human a unique set of abilities or talents. Christians believe that these abilities and heart's desires give an indication of where God wants to use this person to extend His Kingdom on earth. These abilities will reveal one's purpose in life.

When God wants to establish something on earth he shapes people with the "skill, ability, and knowledge in all kinds of crafts to make artistic designs . . . and to engage in all kinds of craftsmanship". The Bible says, " God has given each of us the ability to do certain things well." (Warren, 2002:242) And it also says that God equips one with all one needs for doing His will. The Designer strongly believes that God equips one for such a project as this.

This project has the potential of exploring qualities which will speak to one's senses, one's feelings and one's soul. God declares His might through creation and these buildings should do no less. Accompany the designer as I dream about this design . . .

There is a certain level of expectation in the heart of the person traveling to the Church whether to a service or other religious activity. The person need not be a Christian to experience something of the Living God. The person will enter the site with a specific purpose or activity in mind. The Spirit accompanies every Christian and reveals truths from God through Scripture or through someone else. The Word of God is powerful and no one can hear it without being changed to a certain extent. The Spirit prepares one for what is about to happen. Depending on the reason for the visit, the person would either visit the Auditorium, Chapel, Memorial wall and Biblical prayer garden, Coffee Shop or Bookstore.

The approach to the buildings from the parking area should already point to the religious character of this site. It is important to mention at this point that after the Resurrection of Jesus Christ, God lives in the hearts of people and not in the Temple, as the people used to believe. God says that His children have become His temple. It will thus be in the gathering of believers that the 'temple' of God comes together. The ascent up to the buildings must be enriched with symbols in the form of materials, colour, art and biblical plants. Framed views and the path of movement will encourage the user to be aware of certain elements. This is also important upon leaving the site after an activity.

Upon reaching the top and entering the space between the buildings, the person must easily orientate himself. The harmony and balance between the various architectural elements must create a sense of order, but yet energy and creativity. Surprise elements will create a bit of healthy tension and heighten the intensity of experience. In other words the user must read the architecture and understand the circulation but encounter unexpected elements along the way. This will symbolize something of God's character. He is a God of order, but also a God of unexpected happenings and blessings. The Bible teaches that difficult times are used by God to form and mature our Spiritual lives. Many times in fellowship between Christians, they will share how the grace of God helped them in their weaknesses and hardships. The Bible says: "He comforts us in all our troubles so that we can comfort others. When others are troubled, we will be able to give them the same comfort God has given us." (Warren, :247) It will be in these unexpected architectural elements that one is reminded that God allows hardships but never leaves. These architectural elements can become points of gathering for small groups to share the grace of God.

The person's senses needs to be touched. These senses include seeing, hearing, touching and sometimes tasting. The composition of materials and form and relationships between buildings will either be pleasing to the eye or not. This is why it is worth the effort to use a proportioning system when designing, like the Golden Section for example.

Sound is an element not usually addressed in most architecture but a field of great possibility. The wind is a natural means of sound and can be used to create certain effects at certain areas. Rustling leaves and running water have the inert ability to create an ambience of peacefulness. This is an ideal way to calm a person just coming from the rushed rat race of life. God's House is a place of refuge and enlightenment and the person going there should find rest. Jesus says "Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls. For my yoke is easy and my burden is light." Matthew 11:29 (NIV, 1985:1458)

The choice of materials and planting must encourage people to reach out their hand and touch. Touch is such a powerful expression. God commands His children to love one another as they love themselves. One person touching another lovingly with a friendship love achieves more than words would ever do. The texture and finishes of materials can symbolize certain feelings. Christians are not super human beings; they are normal human beings living by the grace of God. They will also experience the same depth of happiness and sorrow as any other human. People, depending on their state of heart, will experience these different textures differently. Places of contemplation for the individual must be sensitively designed and include as many stimulants of the senses as possible. God works in wonderful and unexpected ways and reveals truths through the least expected elements. The designer can design and plan carefully, but will never understand beforehand the underlying possibilities, which God will only reveal. The designer is an instrument in the hand of the Living God and can only wait with great expectation to see God's plan unfold.

The interior of the buildings must likewise proclaim the presence of God. The interior finishes and spatial qualities will create a certain specific mood within each individual. The interior should facilitate social interaction. It is when Christians speak to one another about God and His wonderful doings that many blessings are exchanged. The atmosphere must be warm and welcoming. The Foyer will allow people to stand or sit during conversation. Free movement inside will facilitate comfort. Orientation to the various facilities must be obvious.

Establishing definite routes can enhance the movement between buildings. These routes can then contribute to the place making of the site as mentioned before. The movement between the Chapel and Memorial Wall must be handled thoughtfully. One must realize that people visiting the Memorial Wall are probably emotionally hurting. The nature of this space must be one of peace and hope. Material application and form can help to create privacy for a worthwhile visit.

The overall composition of the various facilities in the landscape must be organic in nature. Organic things have the ability to grow and similarly the house of God must grow. The dream of Moreletapark NG church is to grow even more and establish a huge Mega Congregation.

This is the dream of the designer's heart. In the following pages the design development, Baseline target setting and technical resolution will be discussed.

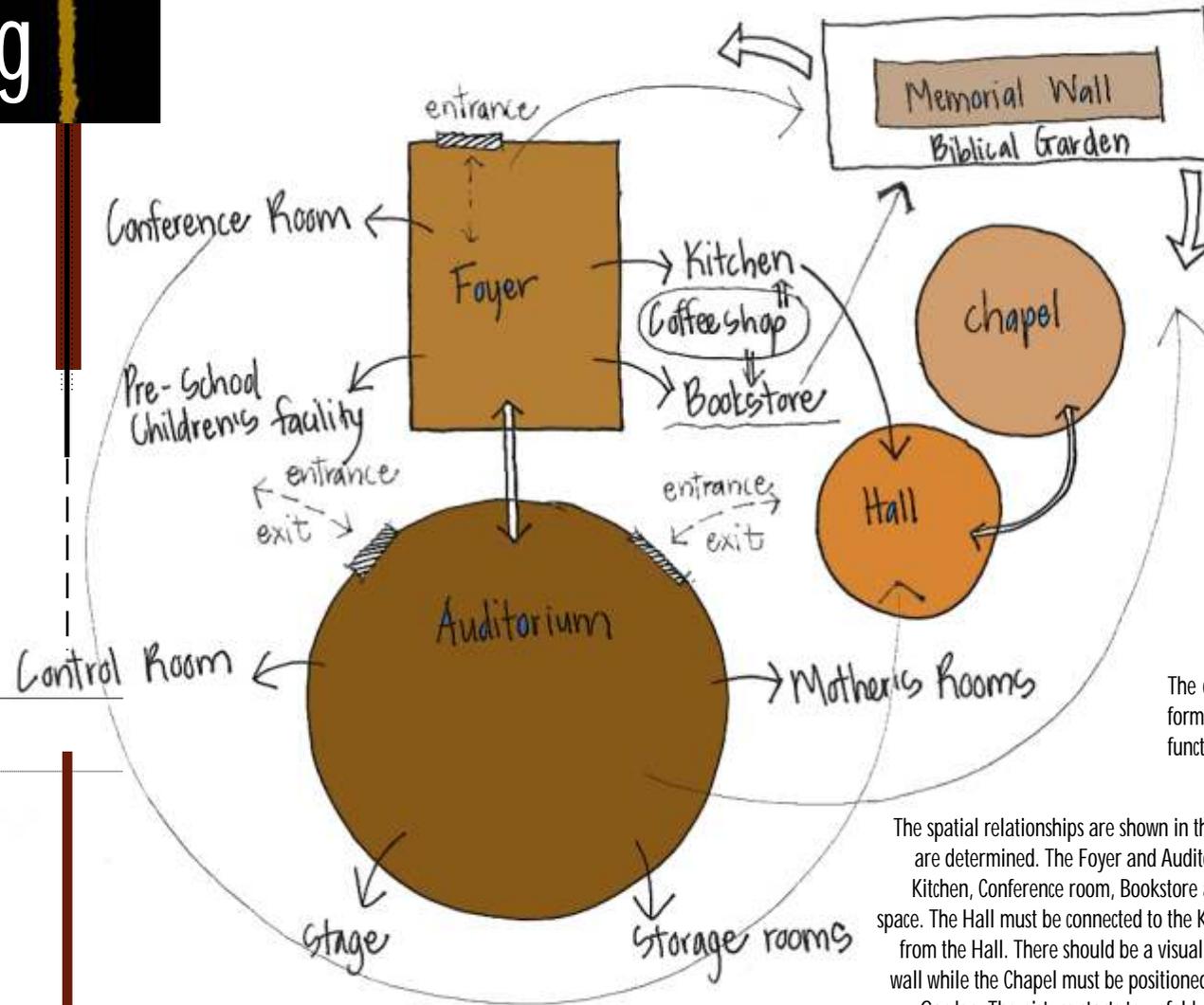
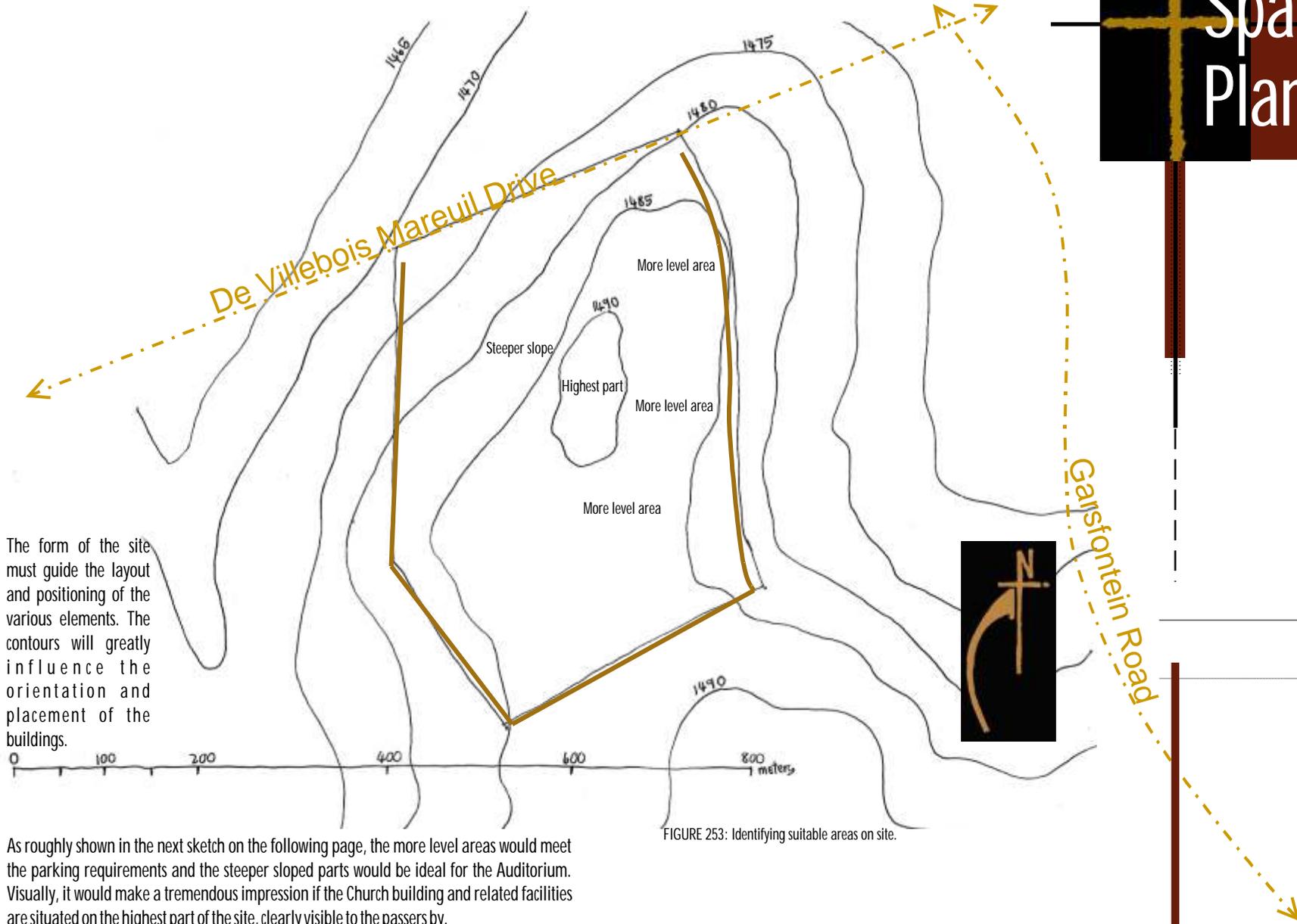


FIGURE 252: Bubble diagram of the different spaces.

The design starts with spatial planning in the form of a basic diagram representing all the functions and their relationships.

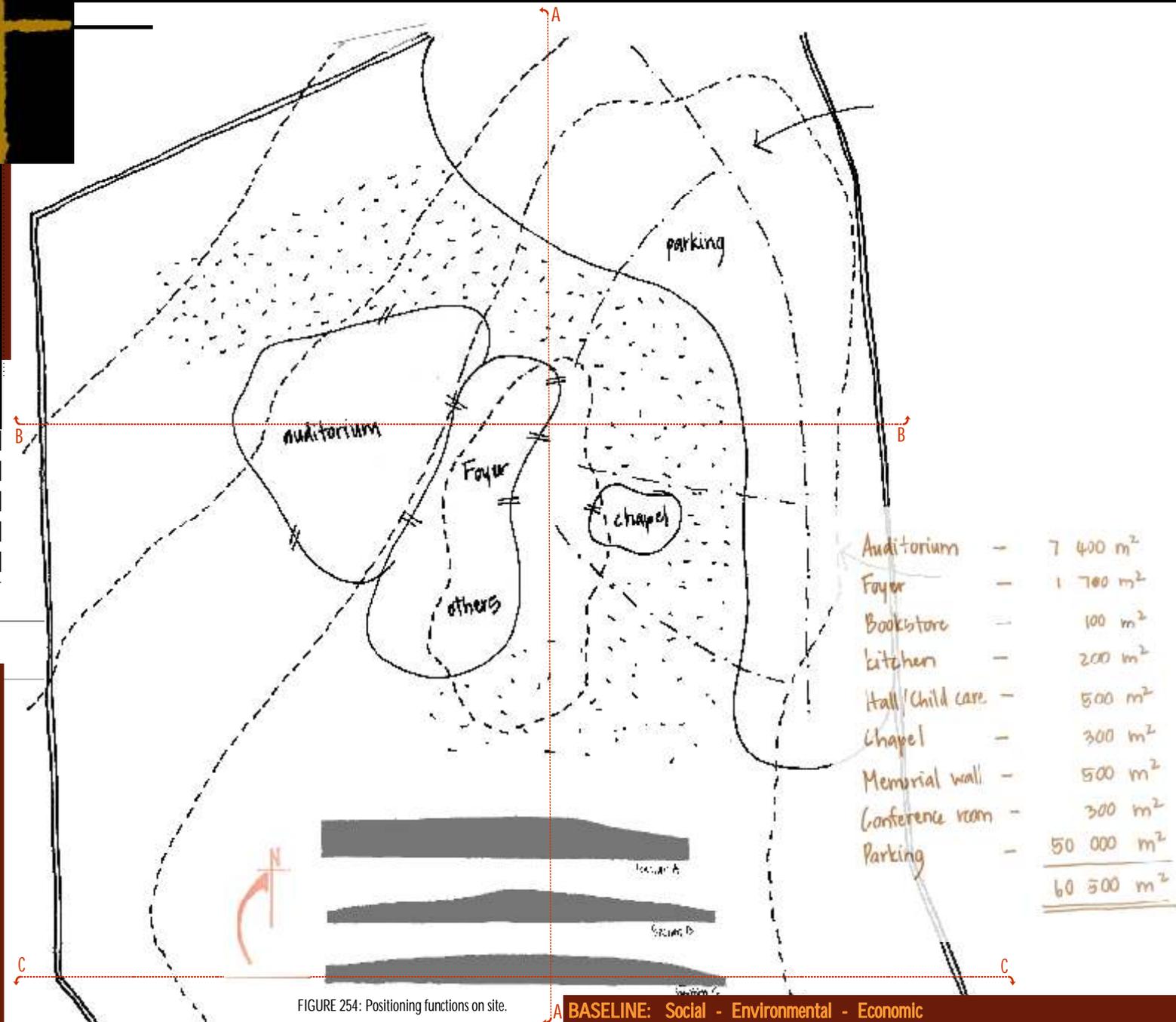
The spatial relationships are shown in the Bubble Diagram. Connections and links are determined. The Foyer and Auditorium must be situated together. Then the Kitchen, Conference room, Bookstore and Coffee Shop must flow from the Foyer space. The Hall must be connected to the Kitchen and the Chapel must not be too far from the Hall. There should be a visual link between the Foyer and the Memorial wall while the Chapel must be positioned closely to the Memorial Wall and Biblical Garden. The picture starts to unfold as the various functions are placed in their relative position to each other.



The form of the site must guide the layout and positioning of the various elements. The contours will greatly influence the orientation and placement of the buildings.

FIGURE 253: Identifying suitable areas on site.

As roughly shown in the next sketch on the following page, the more level areas would meet the parking requirements and the steeper sloped parts would be ideal for the Auditorium. Visually, it would make a tremendous impression if the Church building and related facilities are situated on the highest part of the site, clearly visible to the passers by.

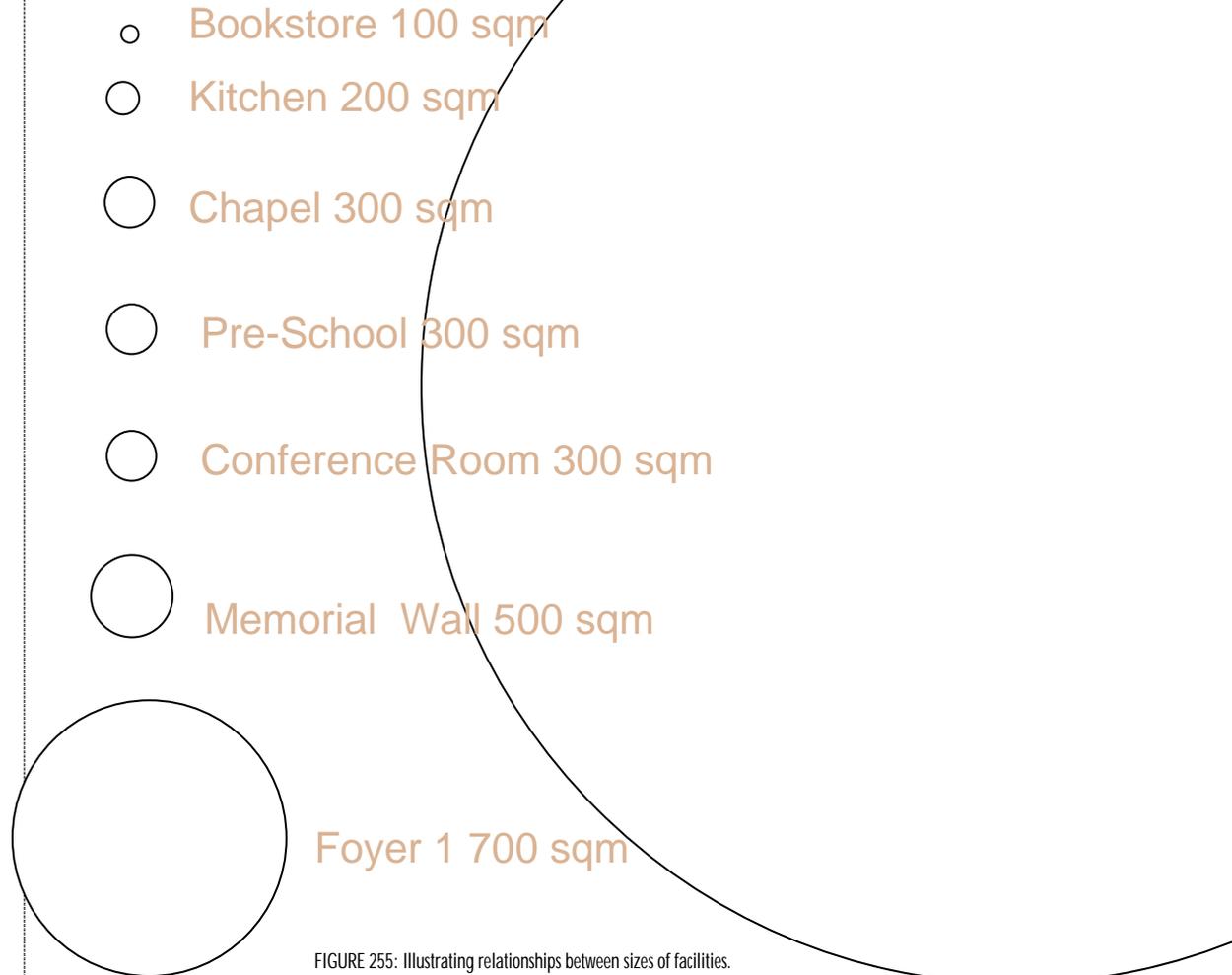


154

FIGURE 254: Positioning functions on site.

BASELINE: Social - Environmental - Economic

These representations of the various areas of the facilities give an indication of the differences in scale. The footprint of the Auditorium will probably be smaller if one or two galleries are used inside. It is apparent that some of the smaller spaces might disappear in relation to the Auditorium.



# Proportions

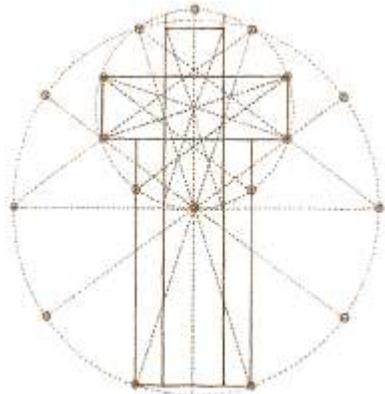


FIGURE 256 : Standard Gothic Plan according to the Golden Section.

## Golden Section

If we look closely at natural and some man-made creations, we find a unity and order common to all of them. This order is evident in certain Proportions that appear repeatedly. The re-occurrence of this theme in all natural phenomena and in some harmonious works of man, points to the relatedness of all things. (Doczi, 1981:1) In his book, Doczi, explores these proportions in various natural phenomena including flowers, shells, fish, butterflies and the human body. Throughout his research it is shown that these specific proportions can be found in all natural phenomena, even the cosmos. These proportions are based on the principles of the Golden Section. From a Christian perspective, these similarities in proportions reflect the fingerprints of God onto His creation. Therefore it is worth the time to explore the implementation of these proportions into the design of the Church building.

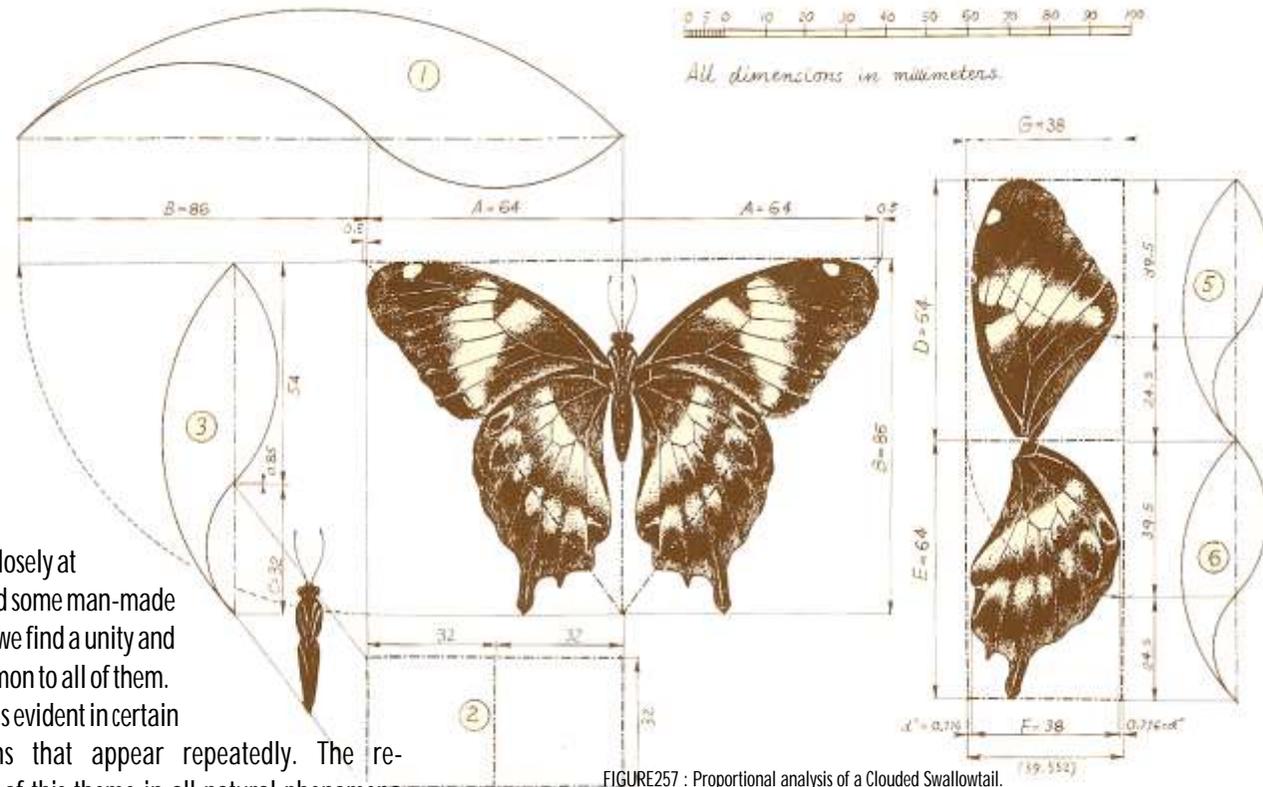
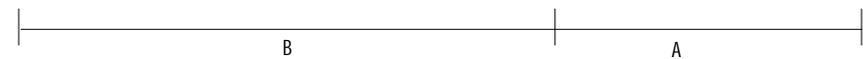


FIGURE 257 : Proportional analysis of a Clouded Swallowtail.

Many historic designers, including the Greeks and Renaissance architects, have used the Golden Section. Le Corbusier based his Modular System on the rules of the Golden Section.

The Golden Section can be defined as the ratio between two sections of a line, or the two dimensions of a plane figure, in which the lesser of the two is to the greater as the greater is to the sum of both. It can be expressed algebraically by the equation of two ratios:

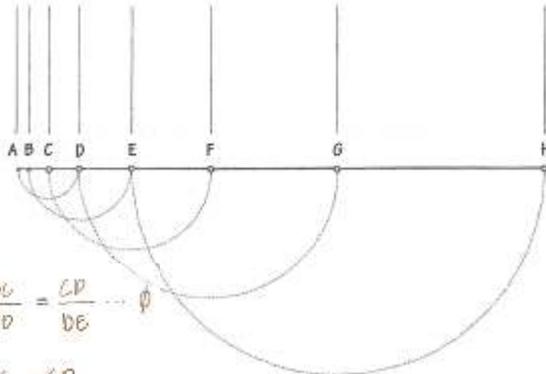
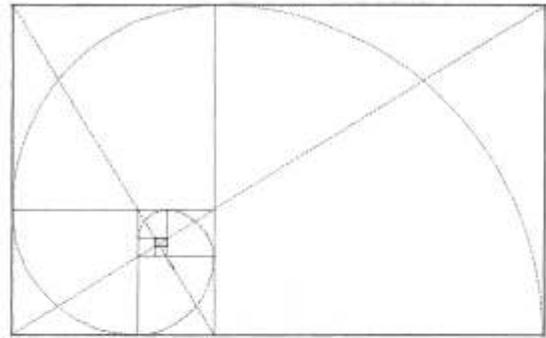
$$\frac{a}{b} = \frac{b}{a+b}$$



# Proportions

Another progression that closely approximates the Golden Section in whole numbers is the Fibonacci Series: 1,1,2,3,4,8,13,21... Each term again is the sum of the two preceding ones, and the ratio between the two consecutive terms tends to approximate the Golden Section as the series progresses to infinity. (Ching, 1996:286)

Why will this be important for the design? One must realize that the design would not comply perfectly with the Golden Section, but it will give a sense of order. The user might not even be aware of the applied proportions but will instinctively experience an added quality to the space, similar to the quality of space in the old cathedrals.



$$\frac{AB}{BC} = \frac{BC}{CD} = \frac{CD}{DE} \dots \phi$$

$$AB + BC = CD$$

$$BC + CD = DE$$

FIGURE 258: The Golden Section in rectangles whirling around to form a spiral.

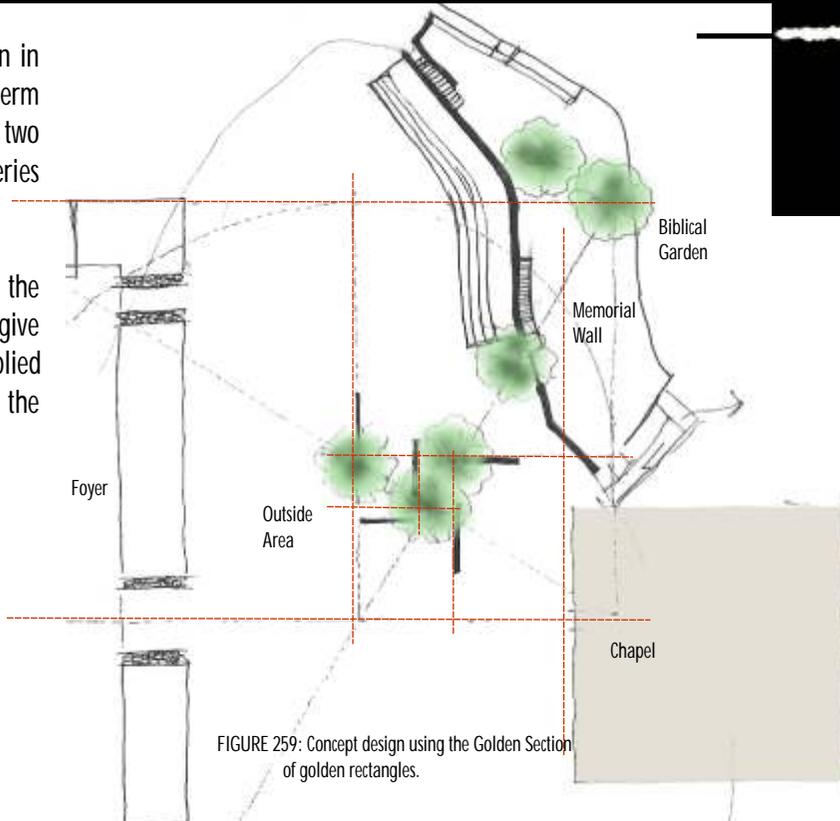


FIGURE 259: Concept design using the Golden Section of golden rectangles.

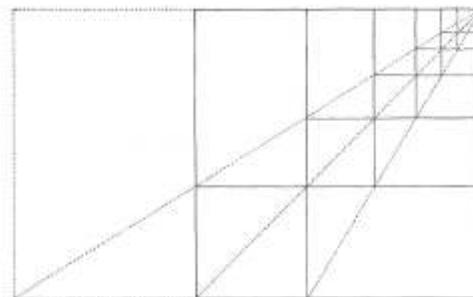


FIGURE 260: Golden rectangles.

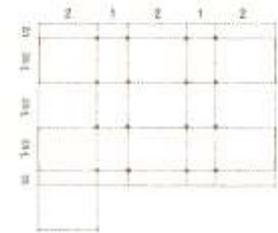


FIGURE 261: Villa Garches designed by Le Corbusier using rectangles.

FIGURE 258: The Golden Section in rectangles whirling around to form a spiral. (CHING, 1996:287)

FIGURE 259: Concept design using the Golden Section of golden rectangles.

FIGURE 260: Golden rectangles. (CHING, 1996:287)

FIGURE 261 : Villa Garches designed by Le Corbusier using rectangles. (CHING, 1996:291)

# Concept Design



158

FIGURE 262 : First concept sketch.

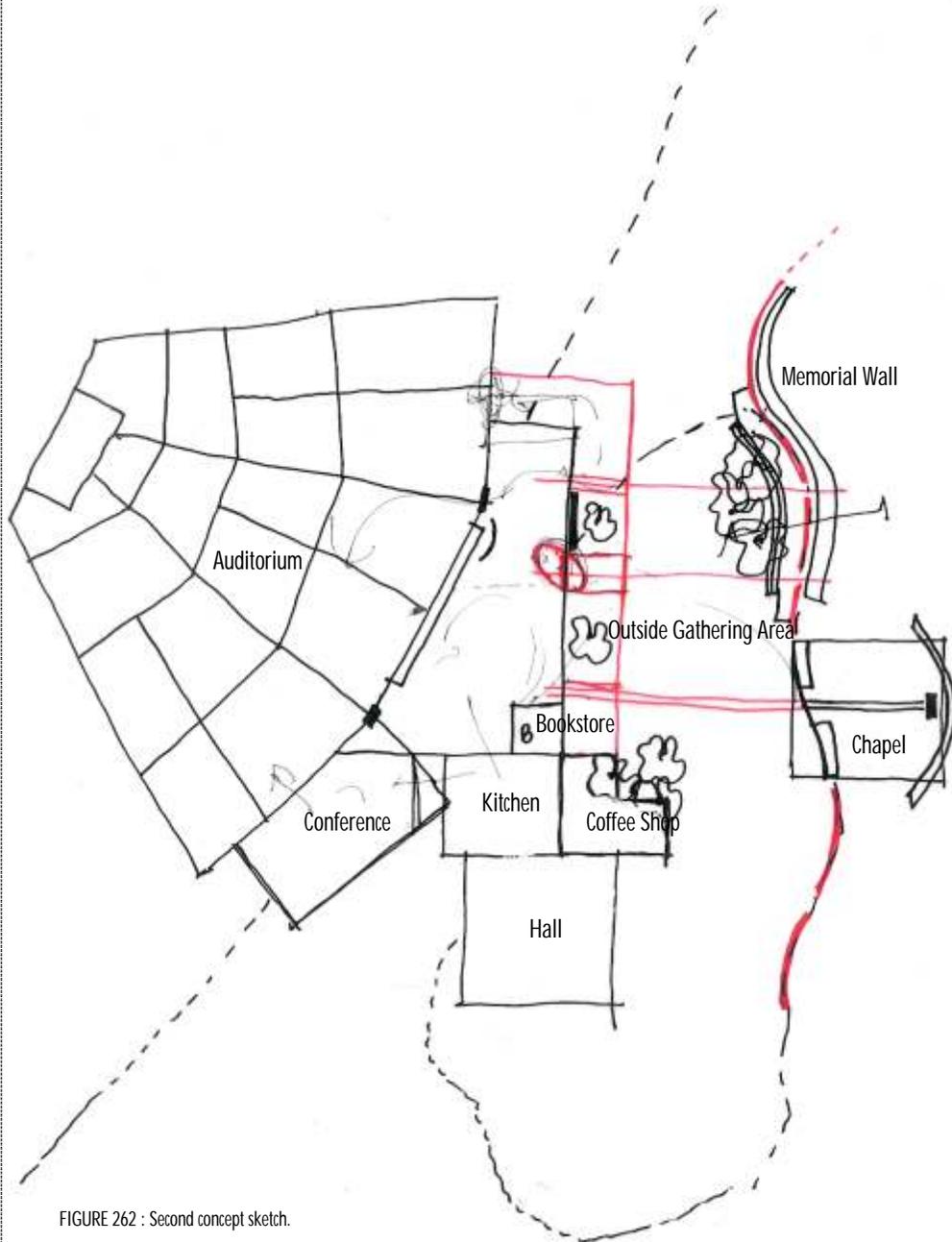


FIGURE 262 : Second concept sketch.

The first concepts are shown here. The Auditorium is positioned to fall with the contours. This positions the Foyer and main entrances on the highest part of the site. All the other facilities extend from this level area. The placing of the Memorial Wall and Chapel on the other side creates a divided space in between. This space becomes very important in establishing a religious atmosphere. This in between space should drag and direct the users to move through into the Foyer. The users would have the best views of the surroundings from this open space. The Memorial wall is used on the eastern side creating more privacy. The placement of the Chapel will enable a view across the Biblical garden in an easterly direction.

The Coffee Shop lives onto the open space and has direct access from outside as well as from the Foyer. The Hall is next to the kitchen and Coffee Shop to act as an overflow or as a venue for functions.

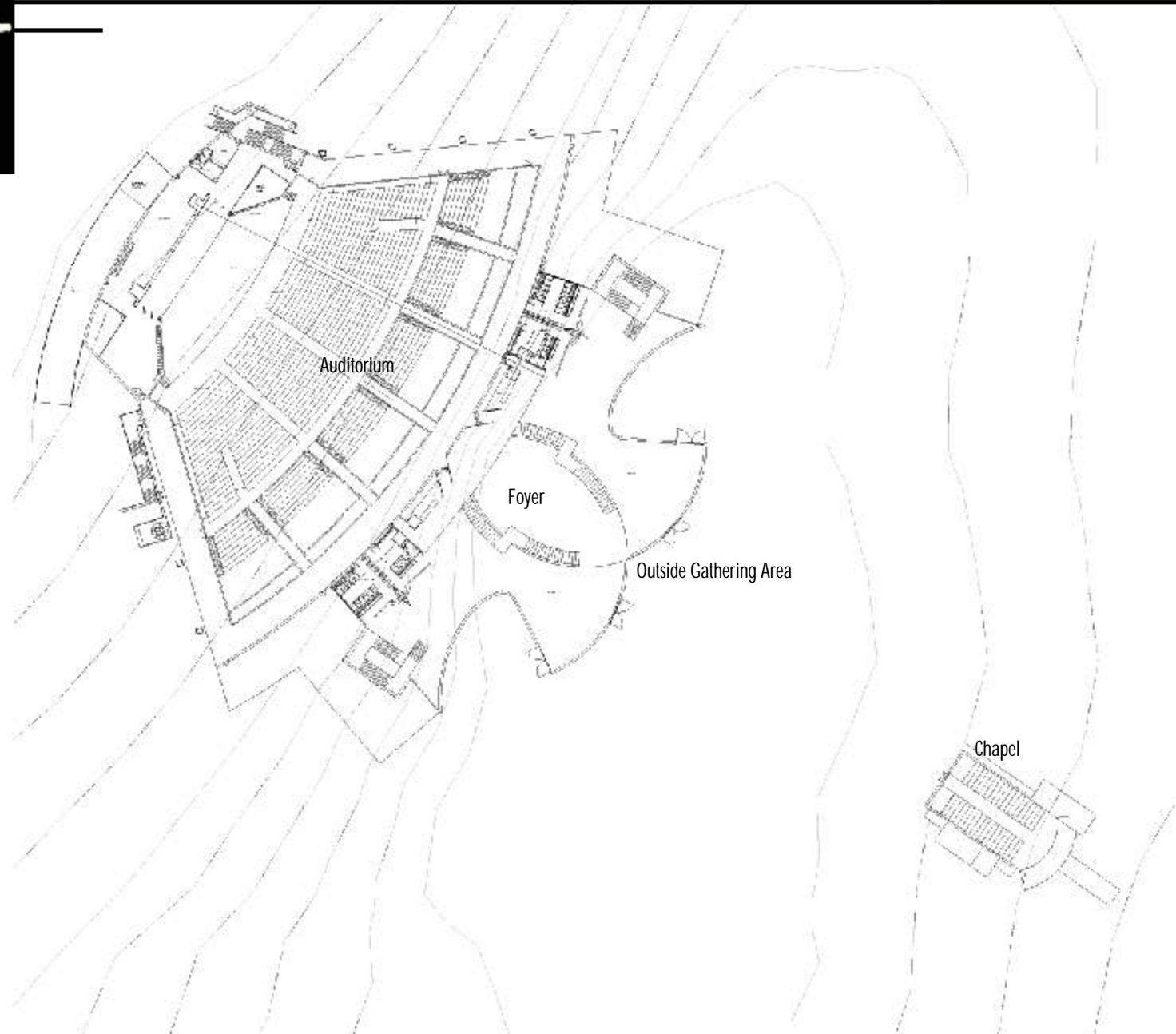
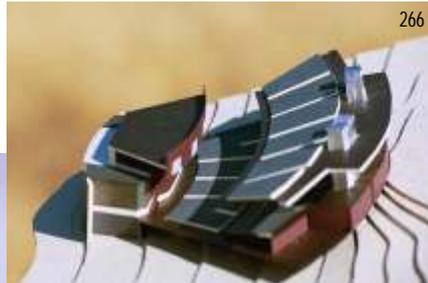


Figure 264: Plan scale 1:1000



265



266

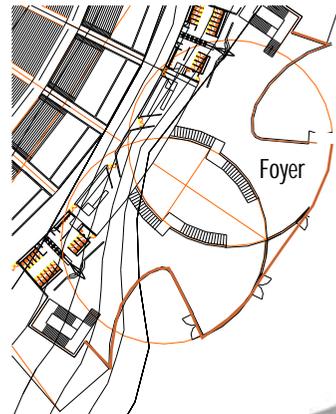


Figure 270: Plan showing overlapping circles.

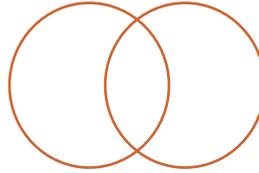
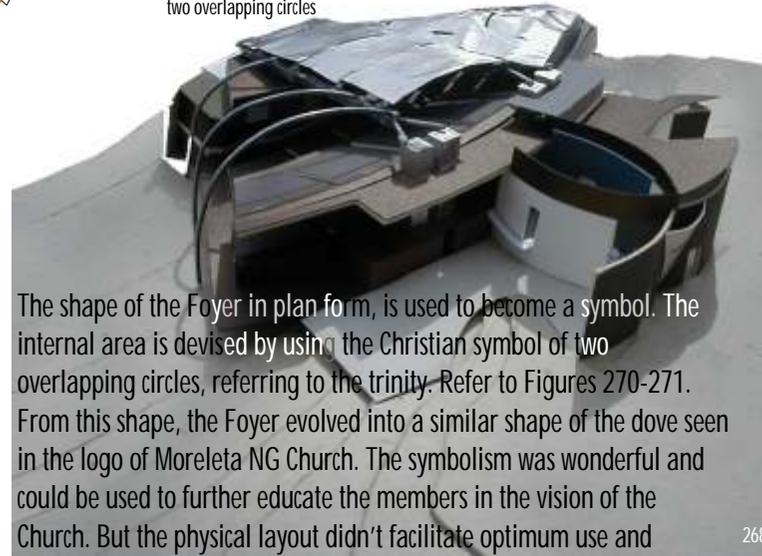


Figure 271: Trinity represented by two overlapping circles



Figure 272: Logo with Dove.



268

The Auditorium is developed mainly from pragmatic design principles. The shape, layout and circulation is determined by: sight lines; the number of seats; access for the disabled; enough ablution facilities, adequate circulation and emergency escape routes. Refer to 'The Accommodation Schedule' p118. The challenge is to have all 10 000 people as close to the stage as possible while maintaining good sight lines on the sides. Because the Auditorium space is so tremendously big, it is very hard to create an atmosphere of worship and intimacy. Thus it is in the design and experience of the Foyer that these ambiances will be found. The designer realized that the exterior spaces, surrounding the Auditorium and Foyer, provide ample opportunities for creating the desired effects. It will then be the spatial experience of the Foyer and surrounding external areas preparing the user for the activity.

The shape of the Foyer in plan form, is used to become a symbol. The internal area is devised by using the Christian symbol of two overlapping circles, referring to the trinity. Refer to Figures 270-271. From this shape, the Foyer evolved into a similar shape of the dove seen in the logo of Moreleta NG Church. The symbolism was wonderful and could be used to further educate the members in the vision of the Church. But the physical layout didn't facilitate optimum use and movement. Other facilities such as the Kitchen, Hall and Coffee Shop could not be fused into this rigid form. The comments on this design included the opinion that it reminded more of a Roman Catholic Church than a Protestant building. People will seldom read a plan in such a manner as to recognize a certain symbolic shape in a building of this scale. Needless to say, the design and layout of the Foyer were reconsidered.



267



269

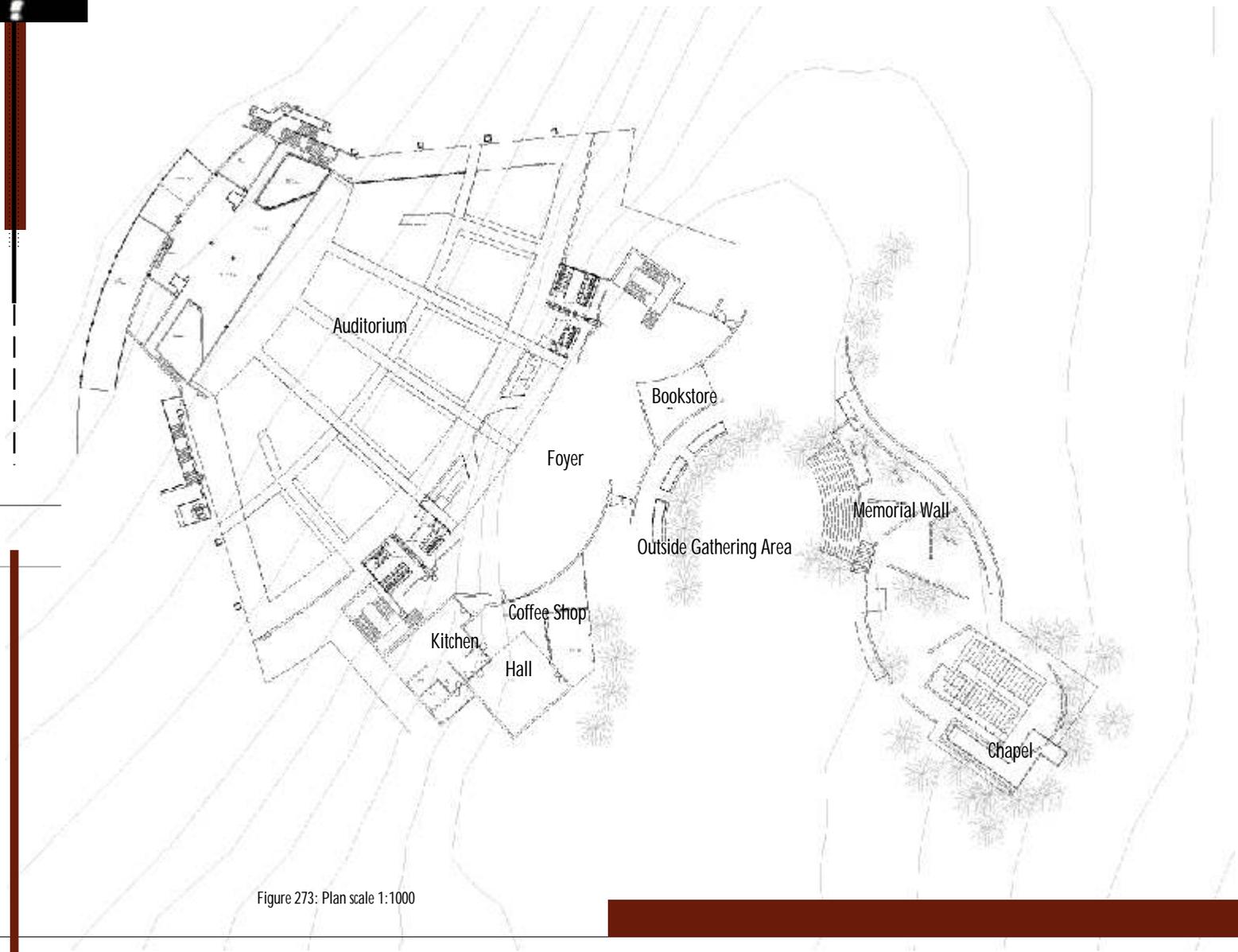


Figure 273: Plan scale 1:1000

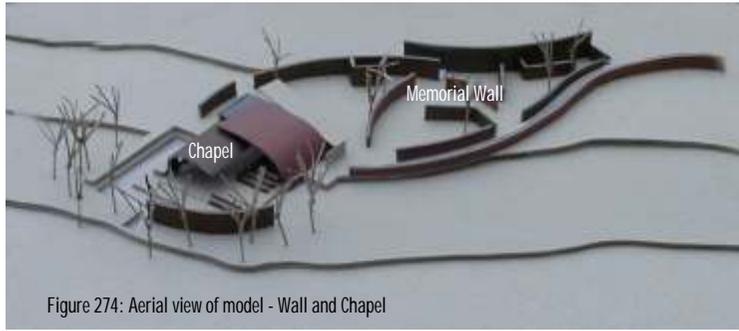


Figure 274: Aerial view of model - Wall and Chapel

The Auditorium remains the same as in the previous design development. There is however a suggestion that the whole building is lowered by 6 meters. This will enable two thirds of the 10 000 people to walk directly into the Auditorium. Only one third will have to ascend with stairs to the upper gallery. This will greatly enhance the effectiveness of escape routes and evacuation. (Refer to the enlarged drawings accompanying this document.)

The Foyer responds to the Memorial Wall and Chapel in creating an outside gathering area. This shape allows for the inclusion of the Kitchen, Coffee Shop, Hall and Bookstore. However, critics feel that there is a clash between pragmatic and intuitive design with the Auditorium and the Memorial Wall and Chapel design. The Foyer has to become the link, the midway between the two very different design approaches. There is still room for improvement.

The project has become very extensive and complex. The Auditorium and Stage have been developed up to the present level. It requires a team of professional consultants to resume the finalization and perfection of the various elements such as acoustics, sound, noise control, fire design and ventilation. Some of these aspects will be discussed later in this document.

For the technical resolution, the focus will be on the Memorial Wall, Chapel and garden.

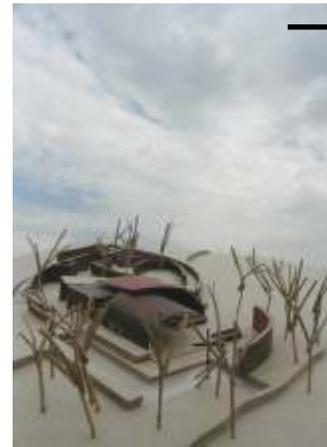


Figure 276: Perspective view on the model, looking North

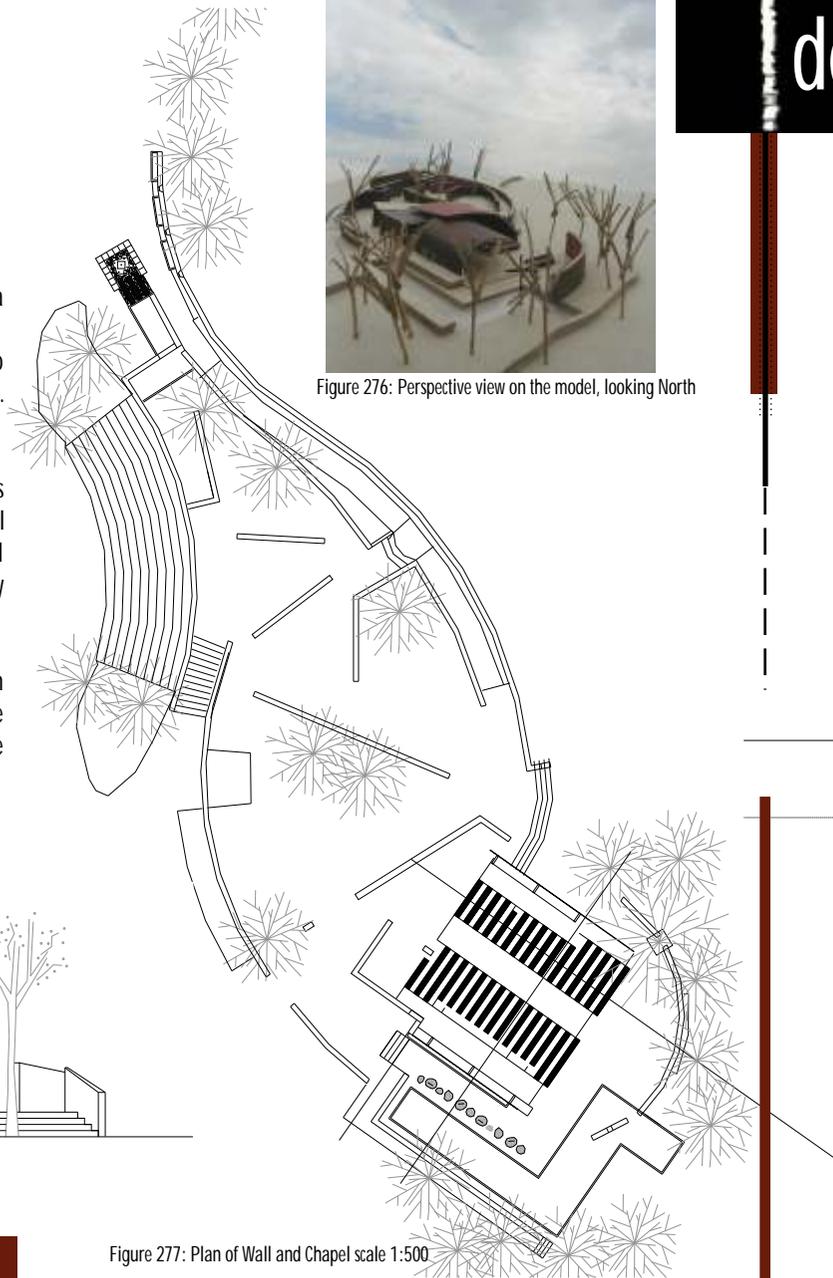


Figure 277: Plan of Wall and Chapel scale 1:500

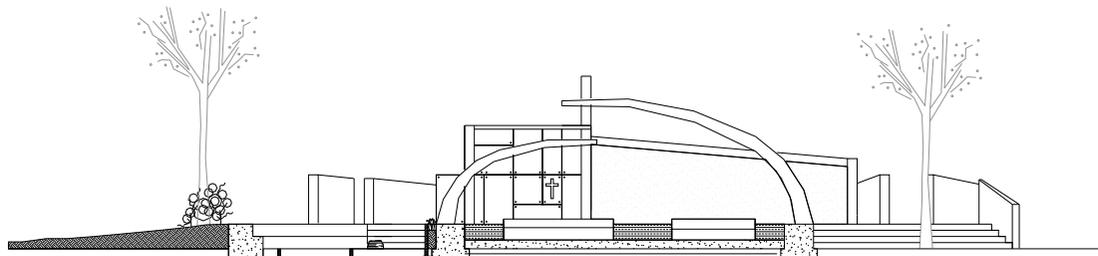


Figure 275 : Preliminary Section of Chapel, not to scale



FIGURE 278 : Plan scale 1:1000

The congregation has raised the need for a Memorial Wall and Chapel.

The Memorial Wall replaces a cemetery. Its purpose is to facilitate remembrance of deceased loved ones and to provide a space where the person's ash can be placed. It will become a place where the living will commemorate the dead, thus it is a place that should suit the needs of the living.

The Chapel will be used for weddings, funerals and memorial services. But it is not only a space for the use of groups or ceremonies. It is also a space that provides shelter for the individual, whether physical or emotional.

The Wall and Chapel intertwine with one another. Life can not be separated from death. All around the Wall and Chapel is a planted landscape with biblical plants. This garden allows for various different activities. Individuals or groups can walk along the pathways, sit on the grass or rocks, listen to the running water or be part of activities around the amphi theater. The walk through the garden to the Wall or Chapel must be calming and soothing to any person.



279



280

Nature is the best medicine for city dwellers. The purpose of this garden is to bring an experience of nature into the lives of the users. The garden becomes a healing garden. Natural materials like stone, pebbles and timber are used.



281

# Baseline

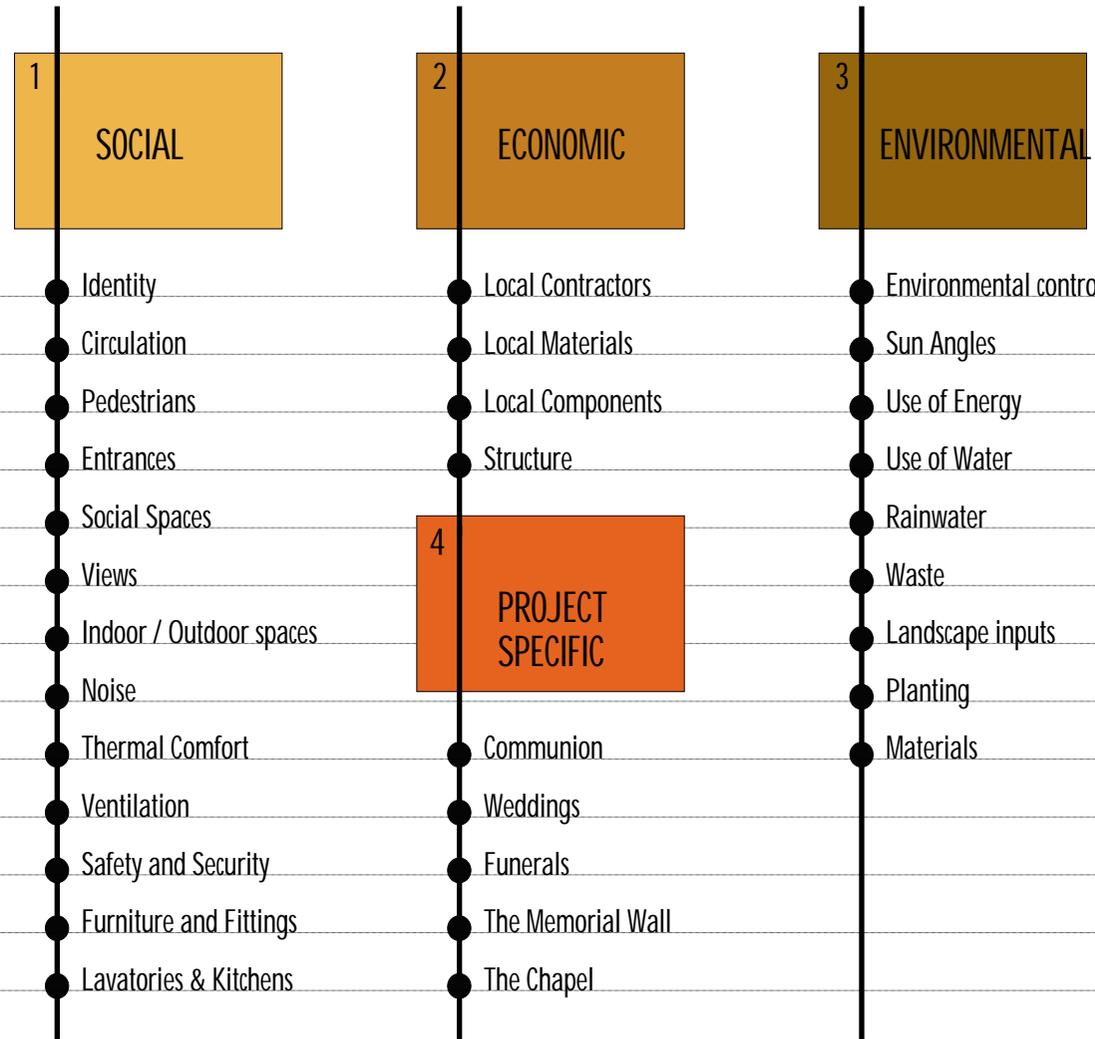


Table 11: Baseline elements

This diagram illustrates the contents of the Baseline research. The SBAT tool has been used to identify relevant topics that need to be addressed. The three main areas in the SBAT comprise the Social, Economic and Environmental aspects. The fourth facet is project specific and refers to Christian activities and facilities.

From the Baseline Table it is evident where the areas of most importance lie. This scheme is definitely more concerned with the social aspects than with the economic or environmental.

The congregation has a known budget. In this case they have R60 million at their disposal. Finances are not a major issue. For the congregation it is more valuable to have professional and adequate facilities that further the Gospel, than facilities that are economical as possible. This does not allow for irresponsible decision making and unnecessary use of available funds.

As Christians it is important to utilize environmental friendly methods and procedures. God commands Adam to tend to the earth and all its living things. It is thus our mandate to look after our natural resources. Therefore, certain methods of conservation are implemented.

In the remaining part of the document, these baseline aspects will be discussed and where applicable, the technical resolution. Due to the huge scale of this project, the Memorial Wall and Chapel encompass most of the technical resolution. The design discussion forms part of the technical analysis. A detail design overview on the Chapel and Memorial Wall will follow at the end.

# Social Identity

Target Description:

The combination of all the buildings on the site must be harmonious and create a definite unique identity for the Church.

How is this Achieved?

The architecture must be unequalled in appearance and character. It must become a landmark for this area. This can be done with interesting architectural forms, material use and colour. The image of the buildings should portray its use. It is architecture with a definite message of the Good News. It is an image of God's majesty and truth.

The buildings must be recognized as Christian Church. The user or viewer is made aware of this by using the most important symbols of the congregation: the Cross, the Dove and the Water. The cross symbolizes Jesus while the Dove represents the Spirit. The water personifies the abundant blessings from God that needs to be distributed to the world. The most important Biblical colours: red, blue, purple and white will also give identity to the architecture.

One must be aware that the site is enormous and small detail will only be noticed when close by and on the site. For people, merely passing by, to realize the identity of the buildings, a larger element will be necessary. This could be in the form of an abstract tower or huge cross on the building or in the landscape. It is crucial for this well defined element to be visible from most areas around the site.

## Prioritization

Facility			
Foyer	5	Essential	5
Auditorium	4	High Req	4
Bookstore	3	Medium Req	3
Kitchen	2	Low Req	2
Hall	3	No Req	1
Chapel	5		
Memorial W.	5		
Coffee shop	3		

168

FIGURE 283: Plan of Church for year 2000 by Richard Meier. (Meier, 1999: 78)

FIGURE 284: Computer Model of Church for year 2000. (Meier, 1999: 78)

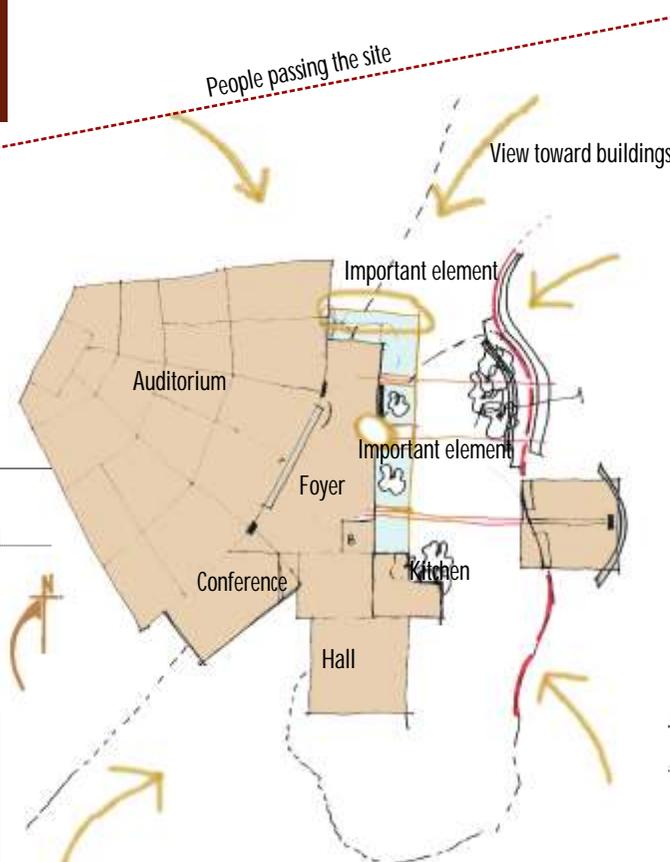


FIGURE 282: Concept design showing points of importance to position landmark elements.

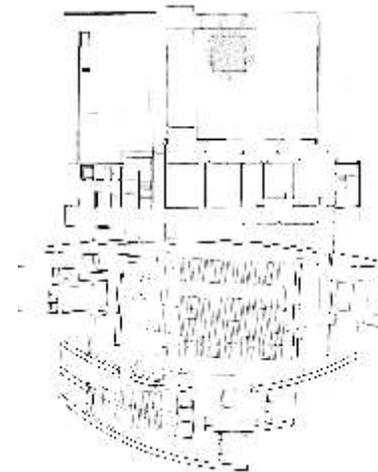


FIGURE 283: Plan of Church for year 2000 by Richard Meier.



FIGURE 284: Computer Model of Church for year 2000.

The Memorial Wall, Chapel and garden are filled with water features, Biblical plants and images of the cross. Because water is such an important part of the vision of the congregation, it becomes a unique element within the architecture. It has a deeper meaning than just aesthetics.

The Chapel has its very own identity and anyone visiting the structure will experience a fresh feel of space. The Chapel is exposed to the elements and is at the mercy of the weather conditions. This will result in no two visits being exactly the same. Any person will have a unique experience. This is further stimulated by using a combination of materials such as off shutter concrete, timber, natural stone and copper. The materials have deeper meanings relating to Biblical truths. Refer to 'Tabernacle' p4. The shapes of the roof structure are unusual and further strengthens the unique identity.

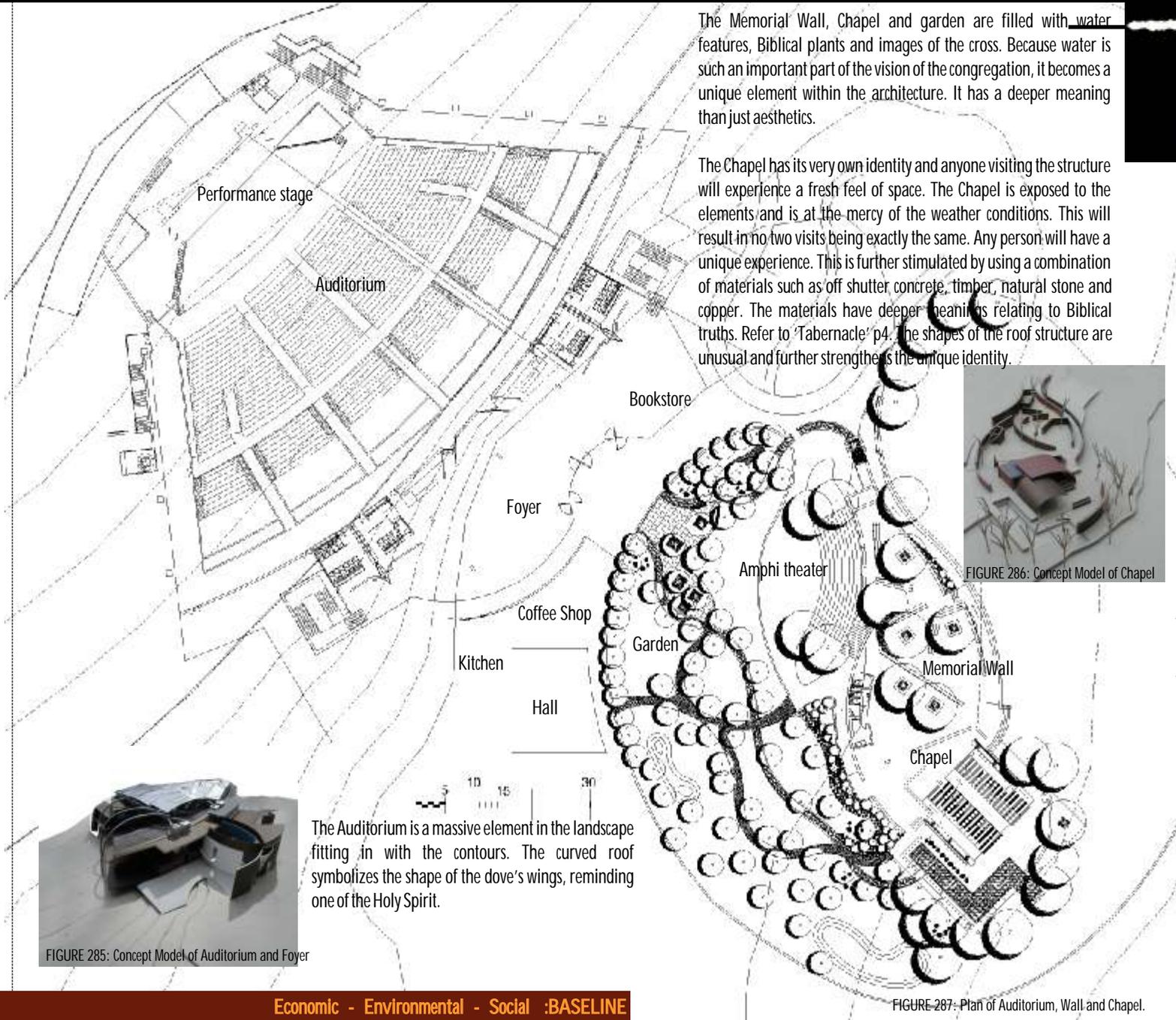


FIGURE 286: Concept Model of Chapel



FIGURE 285: Concept Model of Auditorium and Foyer

The Auditorium is a massive element in the landscape fitting in with the contours. The curved roof symbolizes the shape of the dove's wings, reminding one of the Holy Spirit.

# Social Circulation

## Target Description

All circulation routes must be easy to follow, especially those leading into the Auditorium. All circulation routes should be safe and include religious elements.

### Prioritization

Facility	Priority	Req Level
Foyer	5	Essential 5
Auditorium	5	High Req 4
Bookstore	3	Medium Req 3
Kitchen	3	Medium Req 3
Hall	3	Medium Req 3
Chapel	4	Low Req 2
Memorial W.	3	Low Req 2
Coffee Shop	4	No Req 1

170



FIGURE 288: Concept Layout illustrating circulation.

Circulation in and between the Chapel and Memorial Wall can be more intricate and have a certain level of surprise. Circulation into the main area of the Chapel should be clearly visible and also have a minimum width of 2250mm. The positioning of the other spaces related to the Chapel and Memorial Wall can be more composite, see Figure 291: C. Corridor widths must not be less than 875mm. (T&A, 1998:30)

FIGURE 293: Minimum Corridor Width Memorial Wall and Chapel.



### How is this Achieved?

Interior circulation must be undemanding to follow. If possible, it should comprise of linear movement where the destination is in view. Material finishes such to ensure a smooth and even surface acceptable for the use of wheelchairs. All level changes and transitions between different floor coverings must cater for the disabled. Ramps can be at a maximum of a 1:12 slope.



FIGURE 289: A - Linear circulation from a common point.



FIGURE 290: B - Linear circulation with changes in movement at nodes.



FIGURE 291: C - Composite circulation where important points are centers of activities.

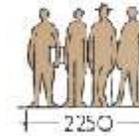


FIGURE 292: Minimum Corridor Width for Auditorium and Foyer.

The circulation in the Foyer and Auditorium will differ from circulation of the Memorial Wall and Chapel. Circulation in the Foyer and Auditorium must be legible and adequate. In other words, there should always be enough room for the number of people moving along the circulation routes. The minimum width of circulation corridors for the Foyer and Auditorium is 2250mm. (T&A, 1998:30) This will allow for the easy movement of 3 people, and acceptable movement for 4 people.

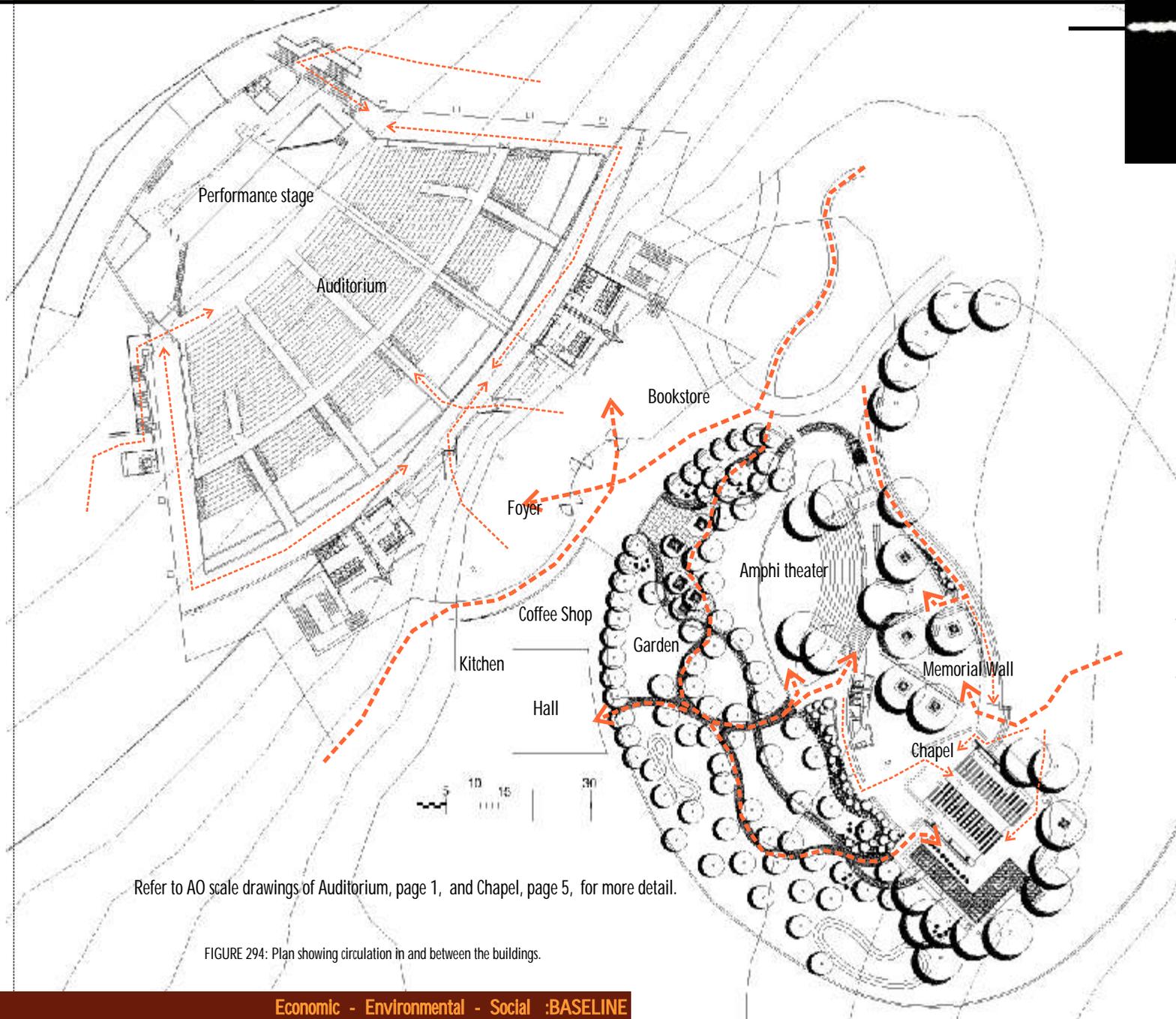
FIGURE 289: A - Linear circulation with from a common point. (Ching, 1996:253)

FIGURE 290: B - Linear circulation with changes in movement at nodes. (Ching, 1996:253)

FIGURE 291: C - Composite circulation where important points are centers of activities. (Ching, 1996:253)

FIGURE 292: Minimum Corridor Width for Auditorium and Foyer. (T&A, 1998:30)

FIGURE 293: Minimum Corridor Width Memorial Wall and Chapel.



The circulation in and around the Auditorium is of a linear nature. This is necessary for people to quickly and easily find their way.

However, the movement to the Chapel and Memorial Wall need not be as hurried. These paths of movement comprise composite circulation. People are forced to slow down and look around while the viewpoints are changing along the pathway. With the slowing down of movement, people are more aware of their immediate surroundings. They become more at ease and start to enjoy the outdoor setting. The pathway through the garden becomes a sanctuary for a tired soul.

171

Circulation through the Memorial Wall area comprise of interrupted linear lines. A person coming to commemorate a departed loved one will most probably already know where the specific niche is situated. Thus the person will walk directly to the desired point following the path of choice. The plan layout allows for different routes to the same spot. The interrupted circulation results in slow movement. This is favorable in creating privacy for the users. It is usually the case that people fall silent and move cautiously when in the presence of a cemetery or memorial area.

# Social Pedestrians

## Target Description:

The site layout and building design must respond to the needs of the pedestrian.

## How is this Achieved?

The site consists of 18ha and is a very large area if one has to cover it by foot. The major activities included in the first building phase must be positioned closely together to minimize traveling distances. Pedestrian routes from the entrances onto the site and parking areas must be kept as short as possible. Provide walkways with smooth surfaces suitable for wheelchair users and easy for walking with accompanying direction notice boards.

## Prioritization

Facility			
Foyer	5	Essential	5
Auditorium	4	High Req	4
Bookstore	5	Medium Req	3
Kitchen	2		
Hall	4		
Chapel	5	Low Req	2
Memorial W.	4		
Coffee shop	5	No Req	1



FIGURE 295: Bushstone

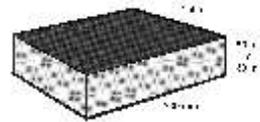


FIGURE 296: Bushstone



FIGURE 297: Irregular ceramic



FIGURE 298: Pebbles.

These are a few examples of exterior walkway finishes. Different materials must be used for different areas. The variety will create richness and character. Materials with an African image is preferred. Natural elements always blend in together quite well. The paving will influence the overall experience of the space.

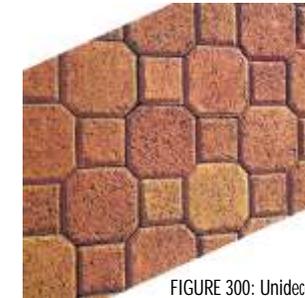


FIGURE 300: Unidecor Paving1.



FIGURE 301: Pebbles and concrete blocks.

FIGURE 295: Bushstone (Grinaker precast,1992)

FIGURE 296: Bushstone Dimensions. Grinaker precast,1992)

FIGURE 297: Irregular ceramic tiles. (Mathews, 2003:19)

FIGURE 298: Pebbles. (Mathews, 2003:19)

FIGURE 299: Concrete Paving. (The Grinaker Service)

FIGURE 300 Unidecor Paving1. (The Grinaker Service)

FIGURE 301: Pebbles and concrete blocks. (Mathews, 2003:67)

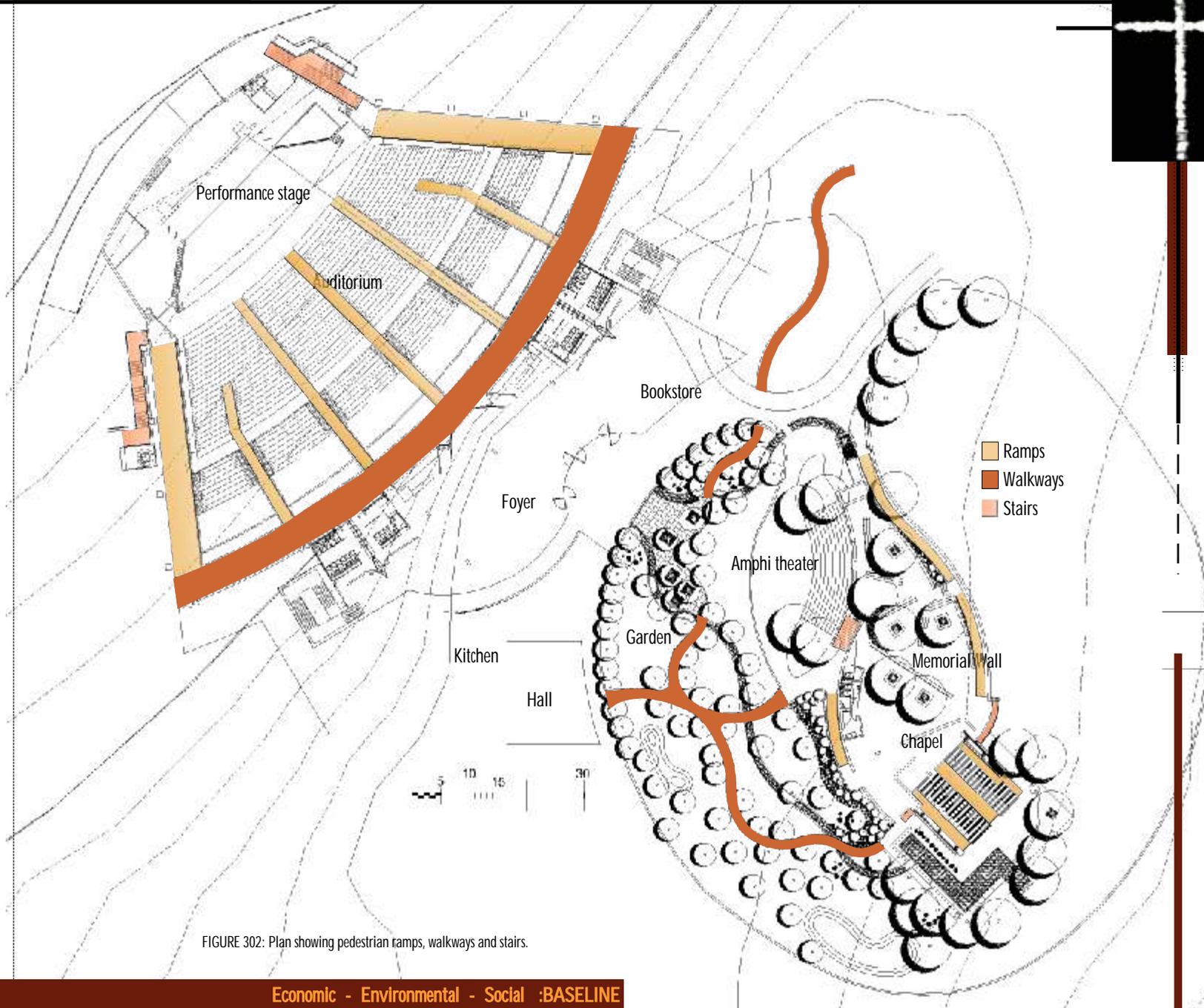


FIGURE 302: Plan showing pedestrian ramps, walkways and stairs.

# Social Entrances

How is this Achieved?

## 1. Practical entrances

The entrances into the Foyer should be distinct and there should be enough entrances. The people arriving are lead to enter the building through the Foyer space; the other entrances leading directly into the auditorium would be closed except those at the back of the auditorium. This will gently force the people to move along a certain route. It is possible to have certain entrances closed because the people are arriving over a period of half an hour and congestion is not a problem before a service. When the service or activity is done, all exits must be opened to empty the Auditorium in approximately 5 minutes. Then the people can leave directly from the Auditorium in all directions to where their vehicle is parked or to their next destination. There must be at least three entrances into the Foyer and 8 - 10 entrances into the Auditorium.

## 2. Symbolism and experience

The experience of exiting the building is as important as entering. The designer wants to create a certain religious atmosphere for the users before and after a service or activity. When entering, the user must be reminded that there is rest in Jesus and that His burden is light. Jesus is the gate to heaven and peace. (John 10:9) For city dwellers, green trees and running water is a means to rest and relax. The use of vegetation and water features will prepare the user for the eminent interaction between man and God.

Upon exiting the building the user must be reminded of the Holy Spirit, symbolized by water, the promise of God's continuous companionship. The landscaping is vital in composing the grace and love of God. Again moving underneath trees and hearing bubbling water create freshness and energy. A person must feel renewed in spirit, body and mind after hearing the Word of God and being in His presence in the company of other believers.

The entrance to the Chapel does not have to be as prominent as the entrances into the Foyer. What is more important is the route towards the Chapel. The user should experience an expectation to meet what lies ahead. All elements must not be revealed at once but spaced over the whole length of the route. This Chapel is closely linked with the Memorial Wall and Biblical Garden.

In the adjacent photograph, Tadao Ando has succeeded in creating an expectation of what lies beyond the two walls, awareness of the route.

Target Description:

The entrances to the Foyer, Chapel and Auditorium are very important in making the user aware of a transition from one space into another. The entrances and exits must be adequate for the number of people using the building.

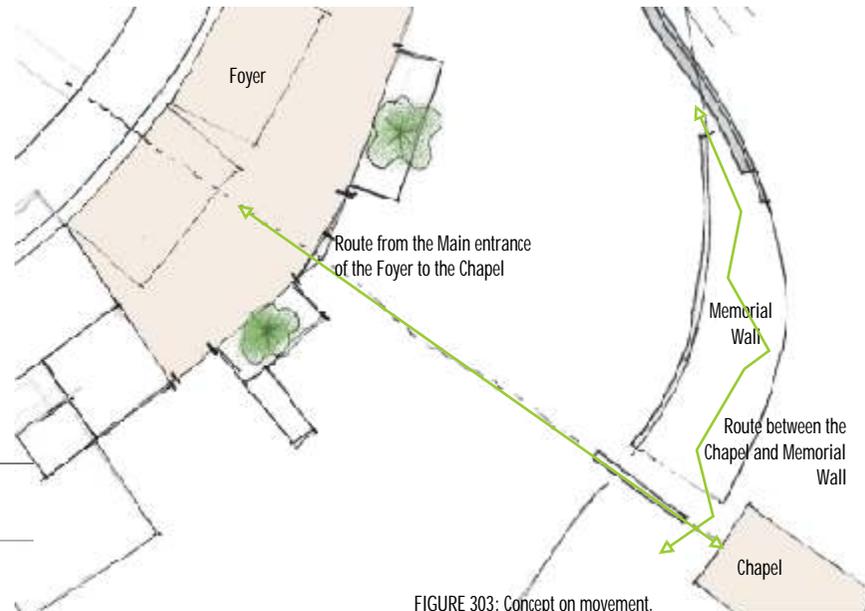


FIGURE 303: Concept on movement.

## Prioritization

Facility		
Foyer	5	Essential 5
Auditorium	5	High Req 4
Bookstore	3	Medium Req 3
Kitchen	3	
Hall	4	Low Req 2
Chapel	5	
Memorial W.	4	No Req 1
Coffee Shop	4	

174

FIGURE 304: Entrance to Water Temple by Ando. (Ando, 12:160)

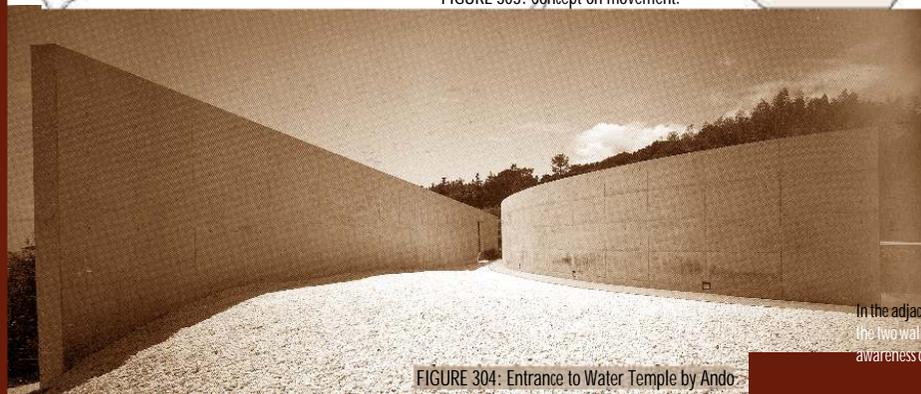
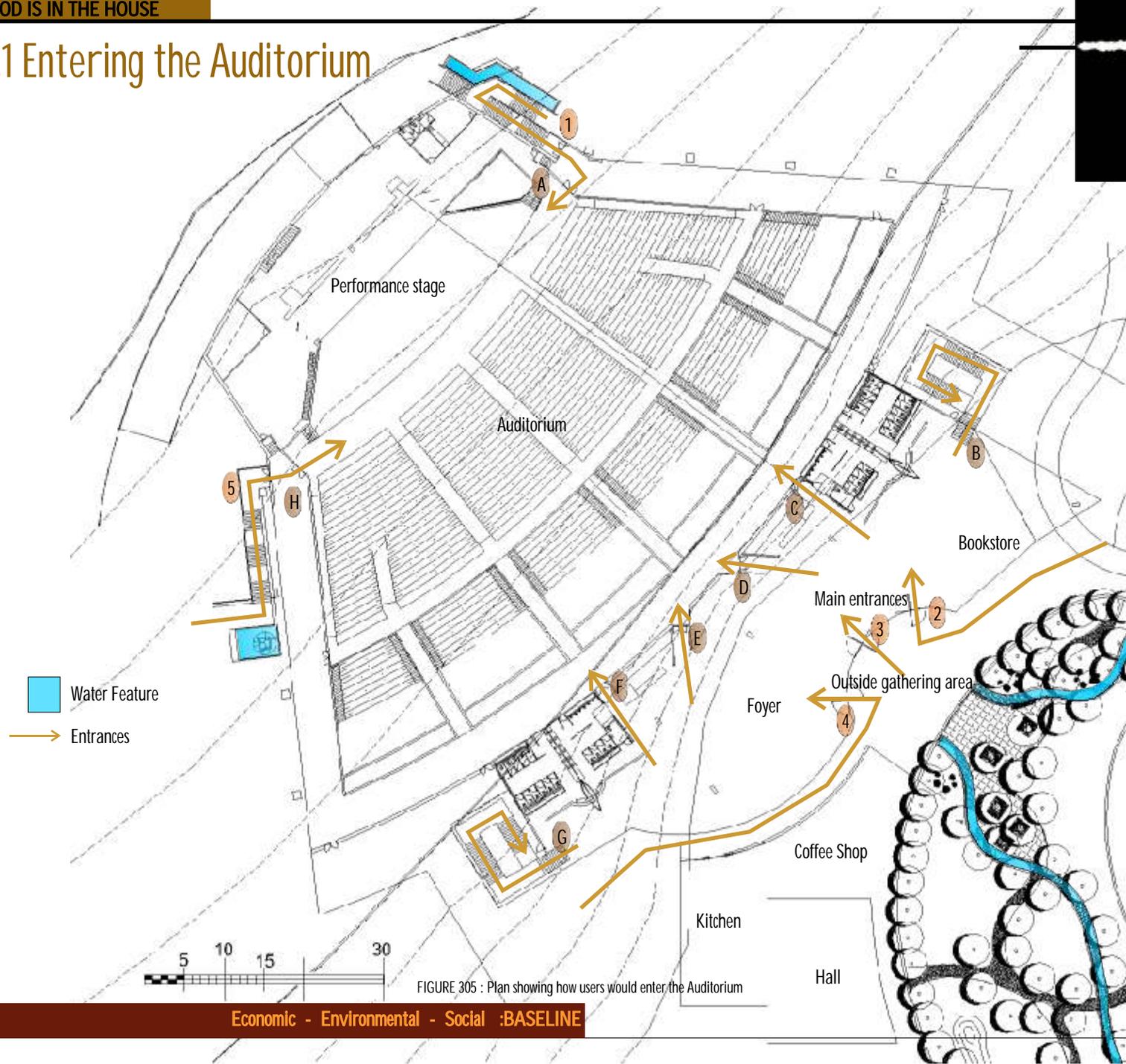


FIGURE 304: Entrance to Water Temple by Ando

# 1.1 Entering the Auditorium

# Social



1 - 5: Entrances into the building  
 A - H: Entrances into the Auditorium

Inside the Foyer, the user has a choice either to walk directly into the foyer through entrances C, D, E, and F; or to ascend with the staircases B and G to the middle and upper gallery. The user can also enter at the sides of the stage. The circulation route around the Auditorium is suited for wheelchair users and they can enter either at the Foyer or at the stage. Thus there is a choice of entrances and people can use the nearest entrance to where they have parked.

FIGURE 305 : Plan showing how users would enter the Auditorium

# Social

## 1.2 Leaving the Auditorium

1 - 9: Leaving the building  
A - J: Exiting the Auditorium

There are more exits than entrances. People now have a choice to either exit closest to their vehicle or move towards the main entrances and socialize at the Coffee Shop and garden.

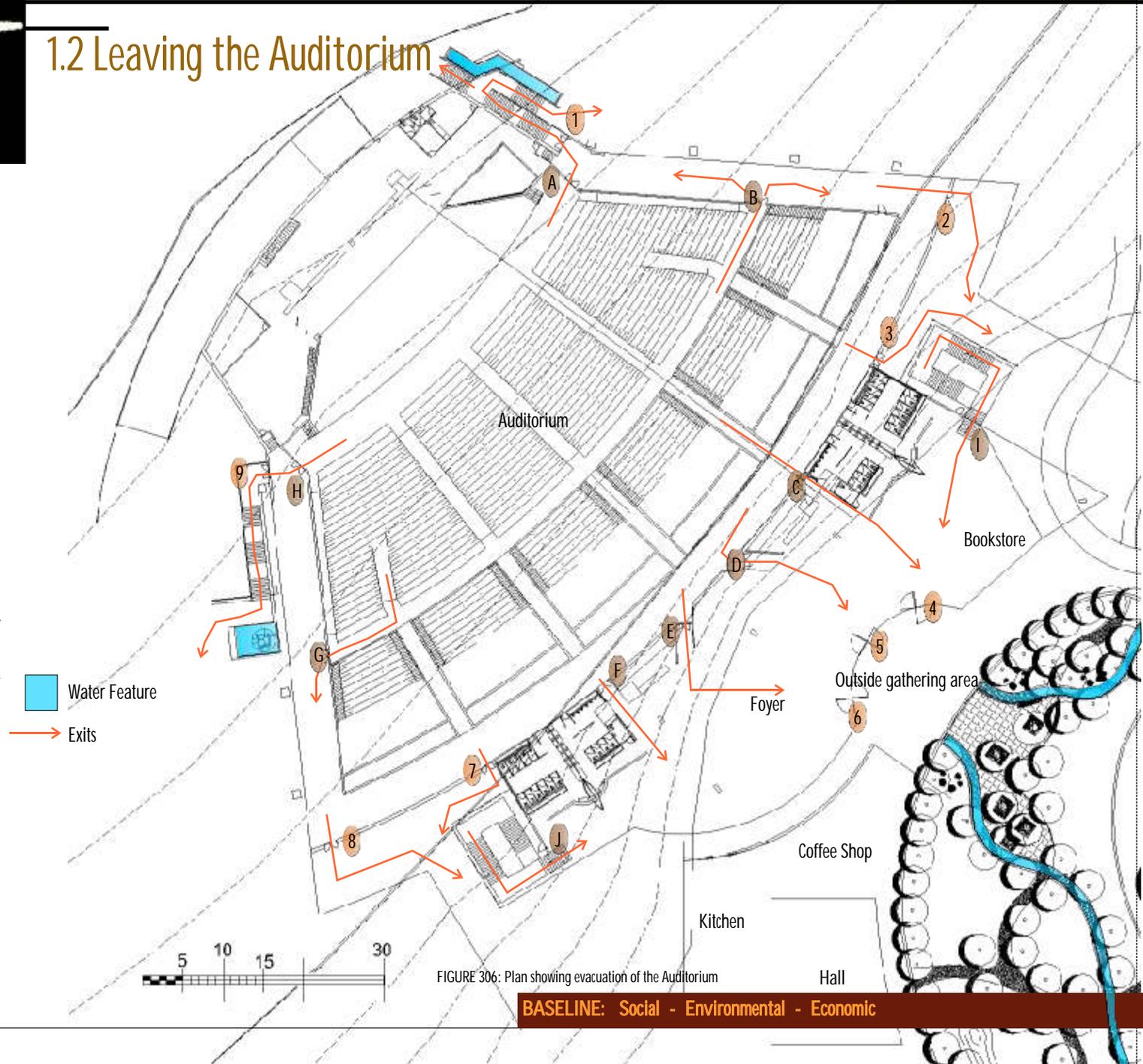


FIGURE 306: Plan showing evacuation of the Auditorium

## 2. Symbolism and Experience

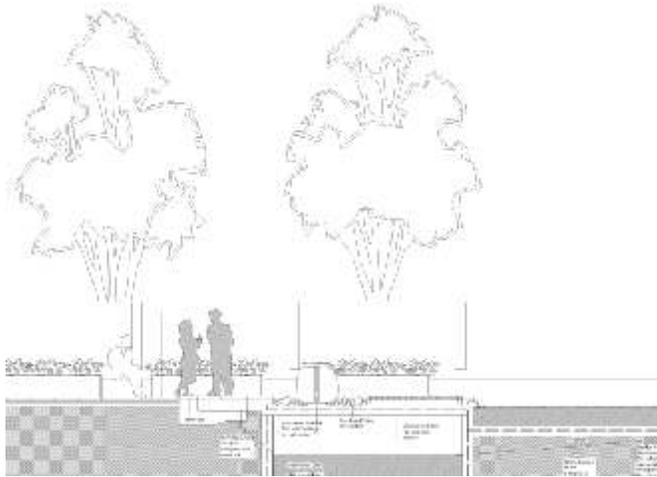


FIGURE 307: Section through Water feature and ramp entrance to the Memorial Wall. Refer to A0 drawing page 3, no 3.1

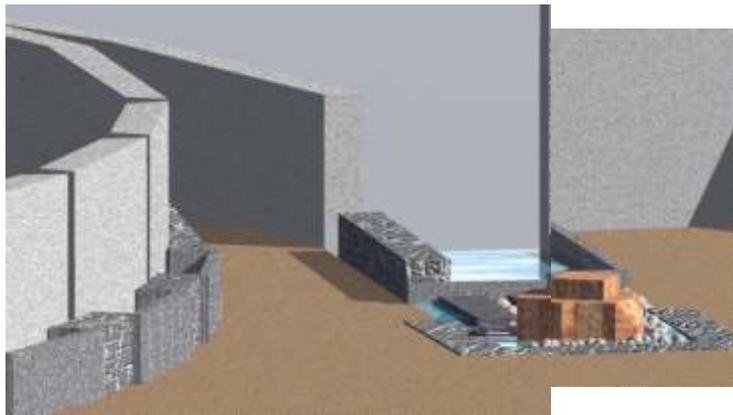


FIGURE 308: Water feature and ramp entrance to the Memorial

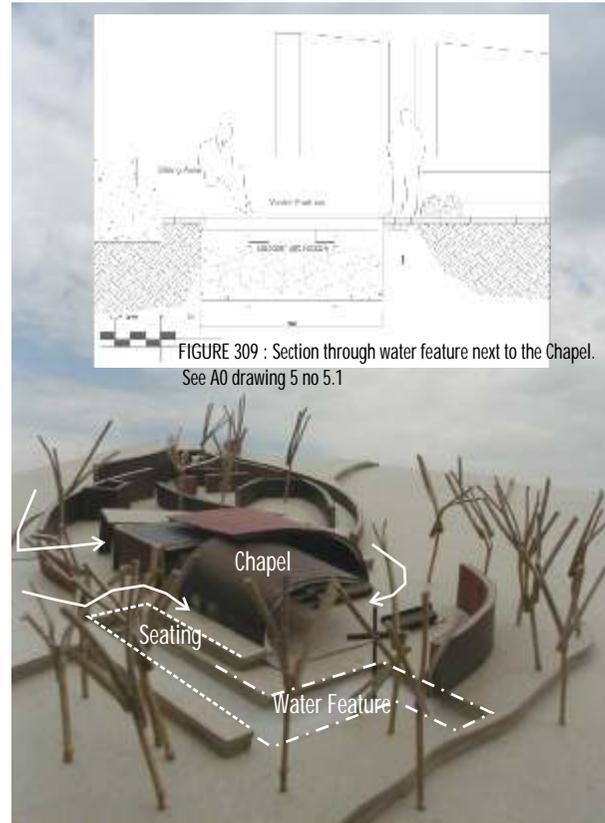


FIGURE 309 : Section through water feature next to the Chapel. See A0 drawing 5 no 5.1

FIGURE 310: Entrances into the Chapel in combination with the water feature

The water is constantly in motion to produce the soothing sound of running water. The materials used to construct the water features include: pigmented concrete, natural stone and clay tiles.

In the adjacent three dimensional representation of an entrance to the Memorial wall, one can see that the different elements create possibilities of individual contemplation and small group interaction. The entrance ramp leading down into the Memorial area is curved and thus conceals what lies beneath. The curved walls draws the user to explore the unseen beyond. This element lends itself to expectation and surprise. The water runs from the top part into the semi-private Memorial area, thus linking the two.

Social

# Social

# Social Spaces

How is this Achieved?

The most frequently used social spaces will be outside the Foyer and the Chapel as well as inside the Foyer. Both spaces will be occupied simultaneously before and after services or other activities. Options of standing and sitting must be provided. The Coffee Shop and Bookstore should open directly onto these social areas to promote business.

The huge size of the site provides tremendous possibilities to create small and intimate social spaces. These social spaces can be distributed around the Chapel and Biblical Garden as well as around the Auditorium in less frequently used areas. These spaces can consist of seating and some form of vegetation. More elaborate spaces can include water and other architectural elements like walls.

Target Description:

Social spaces must induce social gathering and interaction before and after activities. Provision for unfavourable weather conditions is essential.

### Prioritization

Facility		
Foyer	5	Essential 5
Auditorium	3	High Req 4
Bookstore	5	Medium Req 3
Kitchen	1	Low Req 2
Hall	2	No Req 1
Chapel	3	
Memorial W.	3	
Coffee Shop	5	

178



FIGURE 311: Benches and trees.

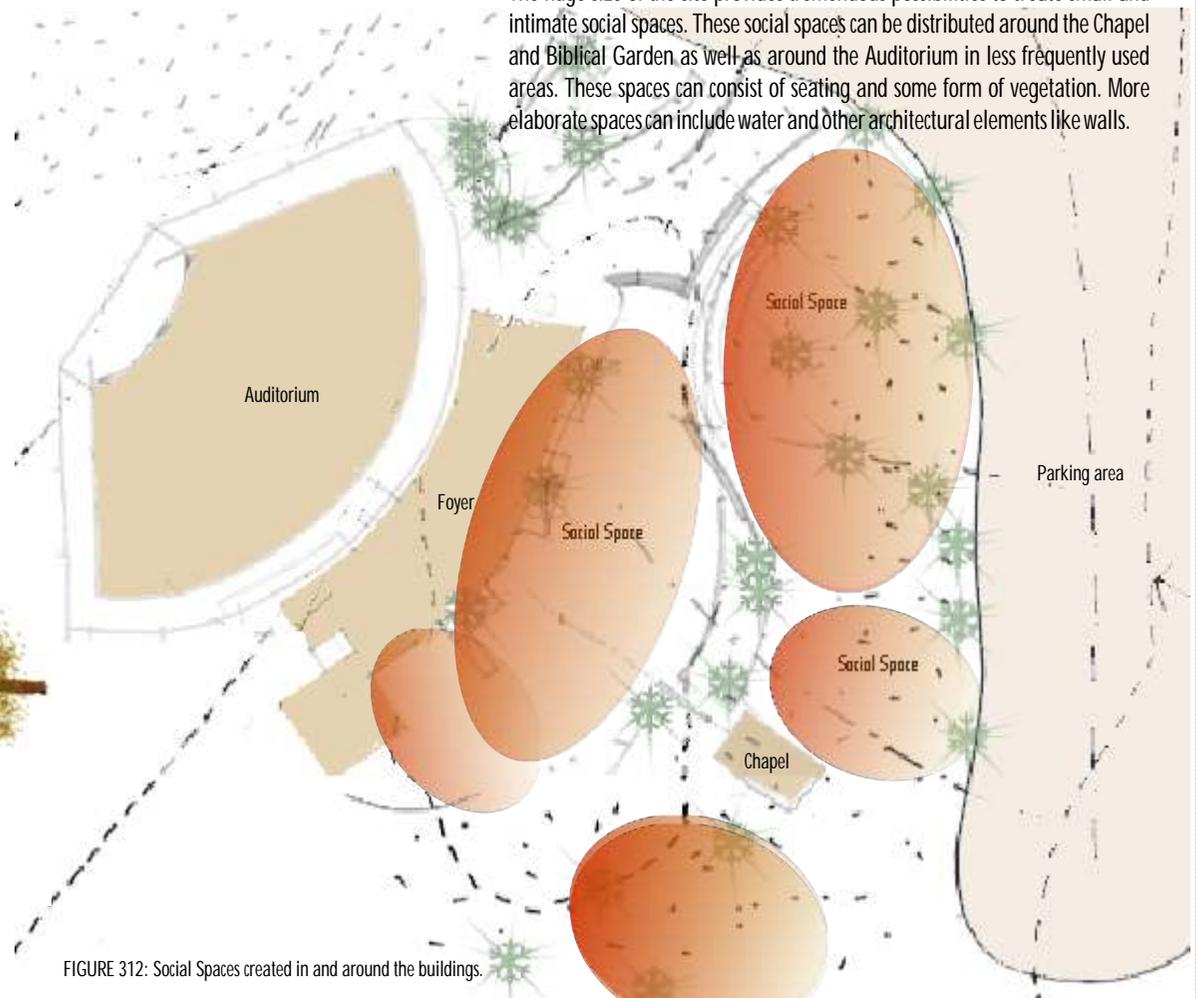


FIGURE 312: Social Spaces created in and around the buildings.

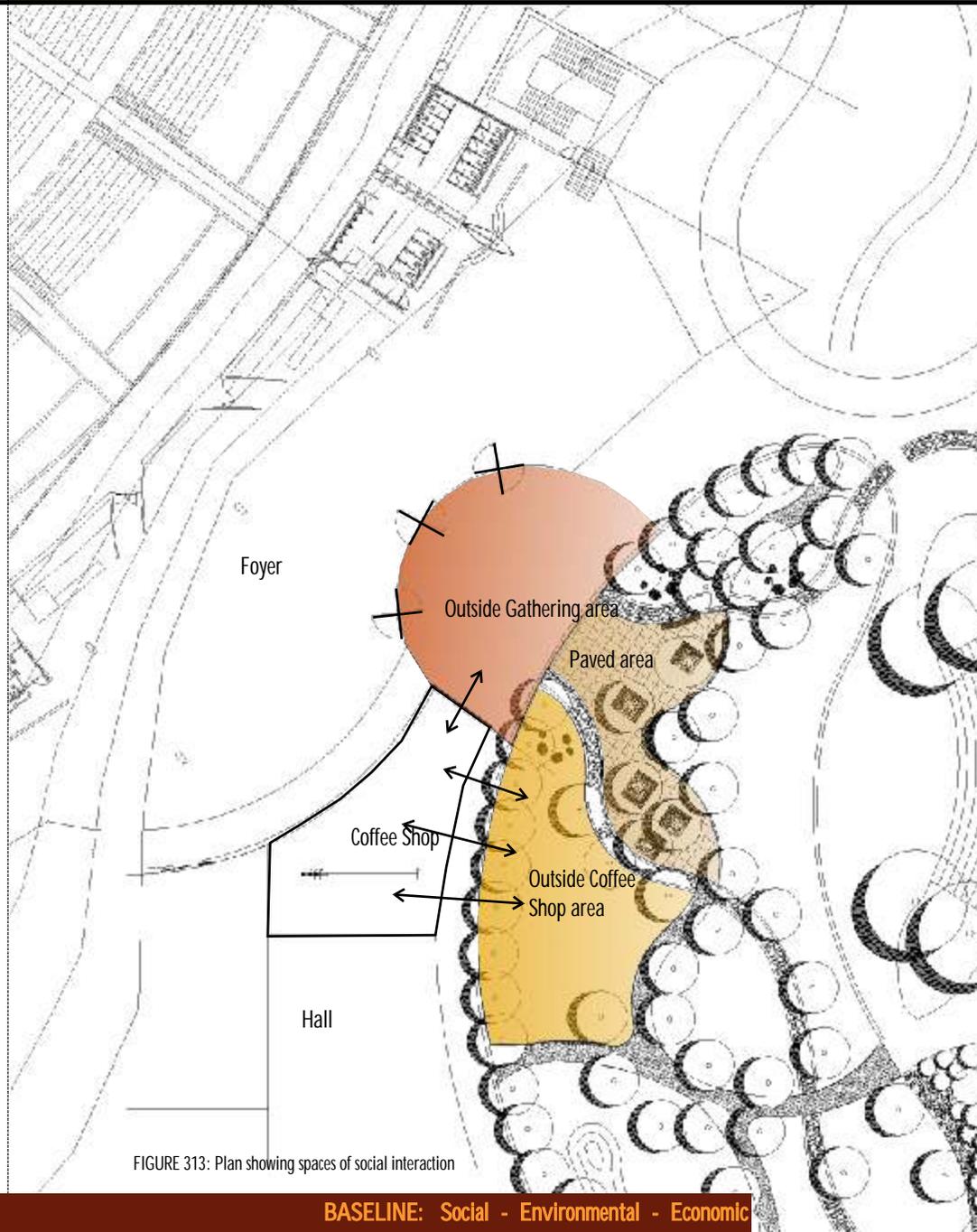


FIGURE 313: Plan showing spaces of social interaction

The Auditorium is in itself tremendously big. One feels dwarfed inside and it is very hard to create a feeling of intimacy inside such a huge space. It will then be in the intimate character of the outside gathering area and garden where the visitor is prepared for the service.

Water and vegetation is used in combination with hard and soft surfaces to facilitate social interaction between people, before and after services.

The Coffee Shop is positioned close to the main entrance to attract people coming in and going out.

The paved area directly across the main entrance creates a space where people can stand or sit while socializing. The tree planters are used as seating. This area is surrounded by grass and two water canals.

This is an ideal area for people to meet before and after activities or services. The bubbling water, green grass, Biblical plants and trees will create a peaceful ambience and people will want to linger. The paved area draws people to explore further and follow the path leading to the tranquility of the Chapel.

The Coffee Shop lives out onto the garden, linking to the gathering area and thus promoting business. People living in the city are tired of constantly being surrounded by huge buildings and hard surfaces. A Coffee Shop viewing onto greenery will be the choice above others. Future development of the Therapy Center will then be positioned as to also live onto the garden.

# Social Views

How is this Achieved?

Direction of movement, pathways and the ordering of elements will direct the user to partake in certain views inside and outside of the building. What are the intentions of the different views? The reality of such a community church is that many different and sometimes conflicting emotions will be experienced. Different views will serve different hearts at different times. Views around the Foyer, Chapel, Memorial wall and Biblical garden can be facilitated by architectural elements and vegetation. Views have a lot to do with circulation and approach.

Target Description:

In most of the spaces, views onto certain elements inside; or views onto the landscape outside are crucial in creating the desired atmosphere. All possible views must be explored.

## Prioritization

Facility		
Foyer	4	Essential 5
Auditorium	2	High Req 4
Bookstore	4	Medium Req 3
Kitchen	2	Low Req 2
Hall	3	No Req 1
Chapel	4	
Memorial W.	4	
Coffee Shop	4	

180

FIGURE 314: View towards the Catholic Church in Taos, 17th century. (Ching, 1996:233)

FIGURE 315: View when approaching Notre Dame Du Haut. Le Corbusier. (Ching, 1996:230)

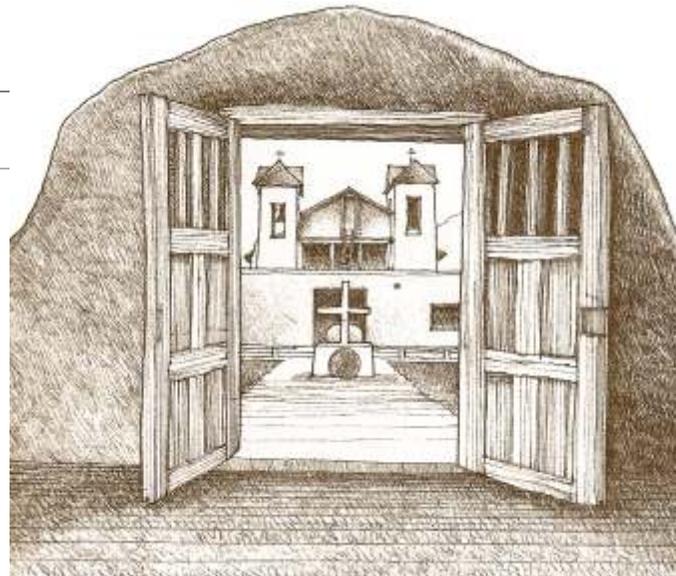


FIGURE 314: View towards the Catholic Church in Taos, 17th century

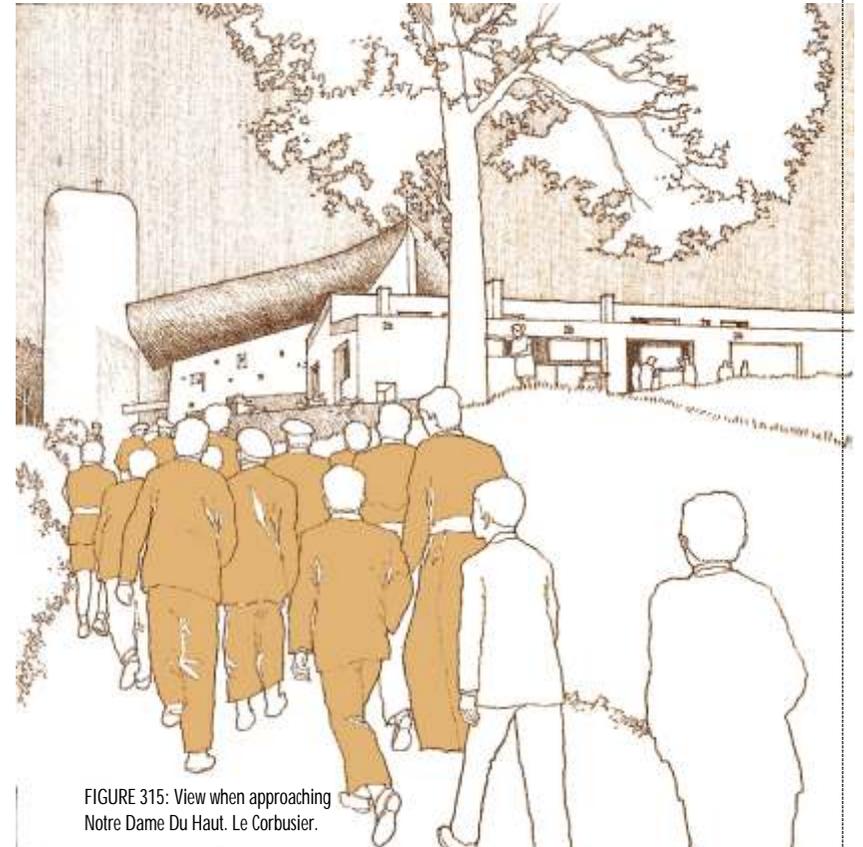


FIGURE 315: View when approaching Notre Dame Du Haut. Le Corbusier.



FIGURE 316: View from the garden towards the Cross at the Chapel.

When one is moving through the garden along the pathway towards the Chapel, one will see the sculpture of the cross behind the tree stems. The tree stems together with the image of the cross points to the crucifixion and the price that was paid for every human. One sees the cross even before one sees the Chapel. The focus is on the cross. Any Christian would then be reminded of life's purpose: to become more and more like Jesus, God's Son. The Cross is positioned in water with its image being reflected. Again one realizes that the character of the Son must be reflected in each Christian for the world to witness. The Cross will be lighted in the evening. Again reminding one that God is the light on our path and in our lives. Psalm 18:28 'You, O Lord, keep my lamp burning, my God turns my darkness into light.' (NIV, 1998:802)

Similarly, the curved copper roofs of the Chapel catches the eye as one proceeds down the pathway. The two curving roofs can be seen as two arms enveloping anyone underneath. It becomes a protective shelter for the broken hearted and a safe haven for those in need of rest. The copper material embodies meaning in that copper reminds us of the voluntary suffering of the Lord Jesus. It is in His suffering that we find rest for he carries the burdens of the world on His shoulders.

When walking down the ramp towards the Memorial Wall, one looks onto the walls from above. The planters on top of the wall are planted with Biblical flowers. These flowers are grouped according to colour, resulting in strips of colour. Colourful flowers will bring joy to most people. Flowers are often used to personify grief and people like to leave a single flower or a small bunch at the niche. The sight of the colourful flowers will slightly ease an aching heart and make the journey to the specific niche a bit easier.



FIGURE 317: Looking down the ramp into the Memorial Wall

# Social

## Indoor / outdoor connection

How is this Achieved?

The facades of the Foyer should be light and predominantly transparent. Transparency will facilitate the connection between the outside and inside. It will further improve this quality if the transparent components can be opened to allow the flow of air into the interior. The combination of glass, timber and concrete must facilitate the flow of space. The Chapel must link to the outdoor space of the Biblical Garden and Memorial Wall.

### Prioritization

Facility			
Foyer	5	Essential	5
Auditorium	2	High Req	4
Bookstore	5	Medium Req	3
Kitchen	2	Low Req	2
Hall	3	No Req	1
Chapel	5		
Memorial W.	5		
Coffee shop	5		

### Target Description:

Space must flow between the exterior and interior of the Foyer, Chapel, Bookstore and Coffee Shop.

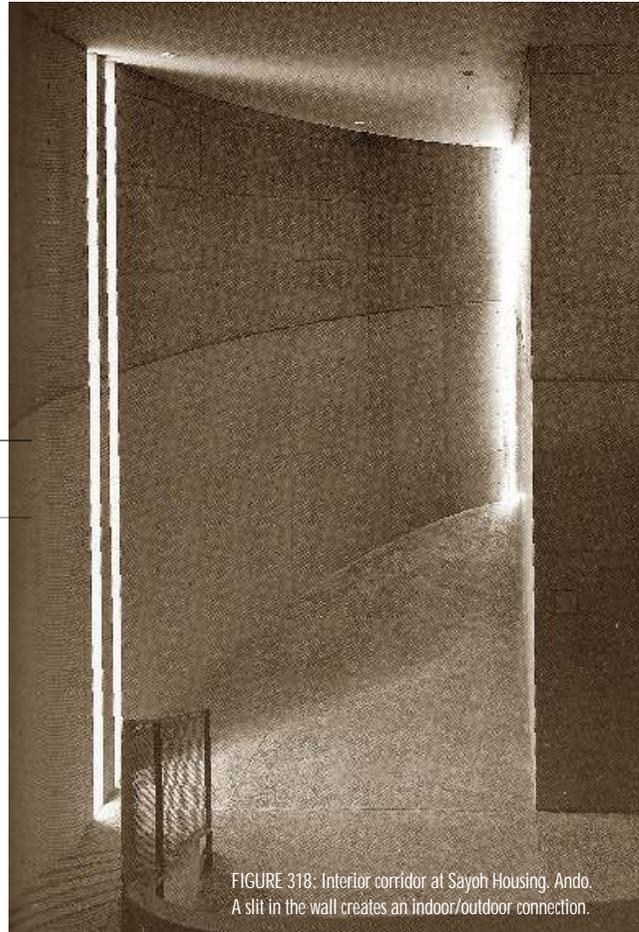


FIGURE 318: Interior corridor at Sayoh Housing. Ando, 12:145. A slit in the wall creates an indoor/outdoor connection.

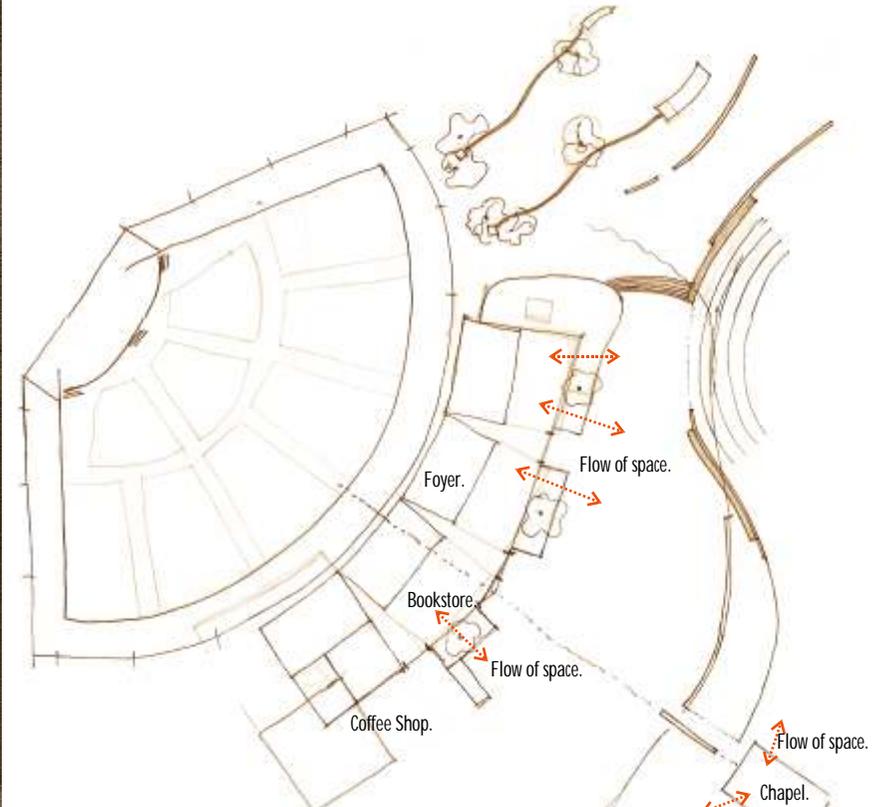


FIGURE 319: Concept layout showing important places where space should flow between the inside and outside.

The Chapel is open to the elements. Contact between indoor and outdoor becomes inevitable. The outdoors lurks into the inside and mingles with one's perception of interior and exterior. Light penetrates from all sides and ventilation occurs depending on the direction of air movement.

With the indoor / outdoor connections of the Chapel it is important to control the short distance views onto the gardens. A feeling of privacy and seclusion is created by the placement of vegetation and trees around the open parts of the Chapel. However, people will be able to look across the landscape through the trunks of the trees. The proximity of the vegetation brings nature into the Chapel.

The garden pedestrian walkway meanders and ends at the water feature of the Chapel. One can not see the entire Chapel until the end of the path. This creates an expectation and a definite experience of the transition between the outdoors and inside the Chapel.

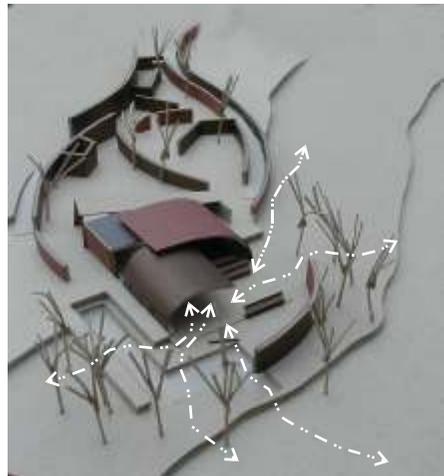
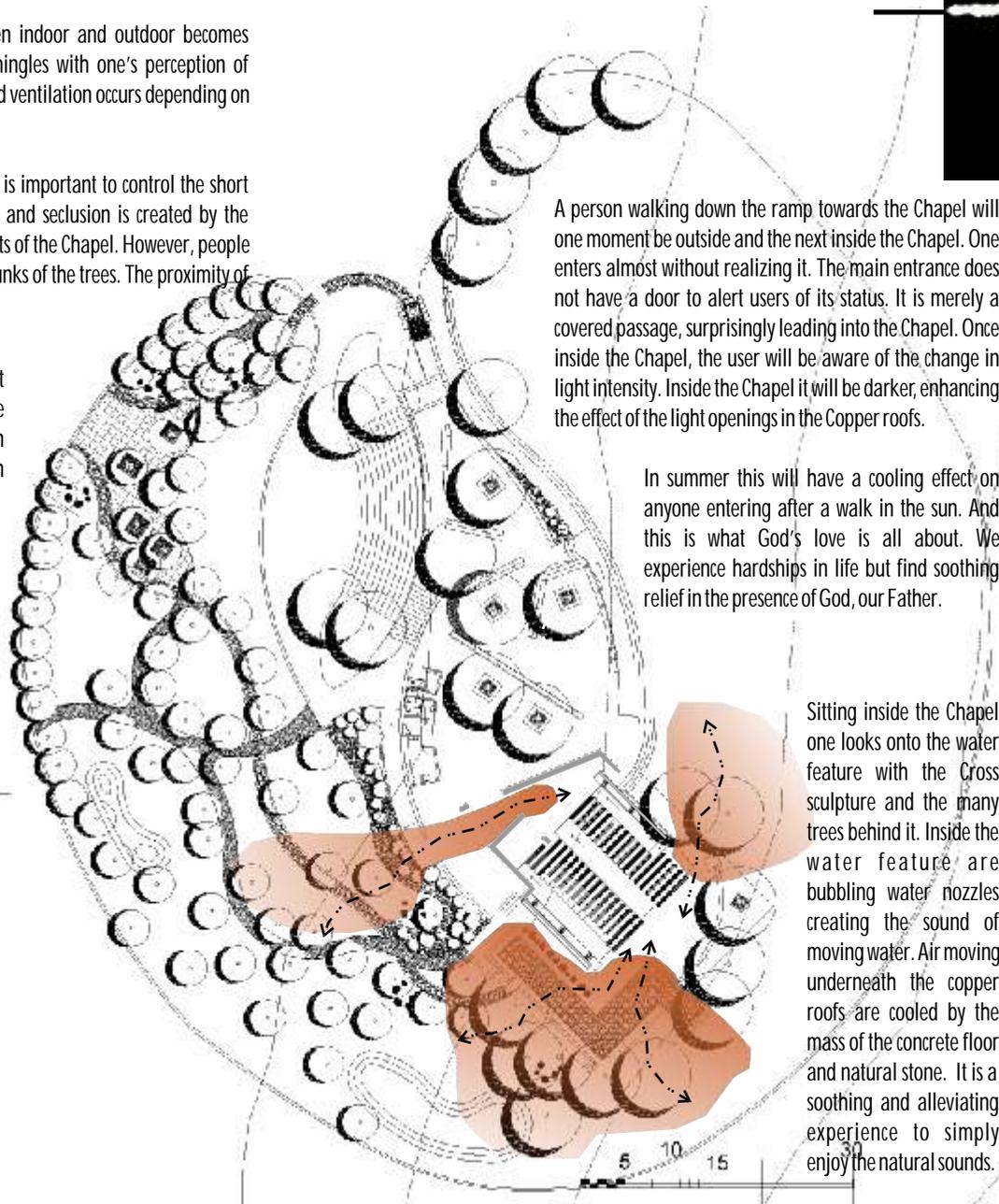


FIGURE 320: Concept model of Chapel showing the indoor / outdoor connections.



A person walking down the ramp towards the Chapel will one moment be outside and the next inside the Chapel. One enters almost without realizing it. The main entrance does not have a door to alert users of its status. It is merely a covered passage, surprisingly leading into the Chapel. Once inside the Chapel, the user will be aware of the change in light intensity. Inside the Chapel it will be darker, enhancing the effect of the light openings in the Copper roofs.

In summer this will have a cooling effect on anyone entering after a walk in the sun. And this is what God's love is all about. We experience hardships in life but find soothing relief in the presence of God, our Father.

Sitting inside the Chapel one looks onto the water feature with the Cross sculpture and the many trees behind it. Inside the water feature are bubbling water nozzles creating the sound of moving water. Air moving underneath the copper roofs are cooled by the mass of the concrete floor and natural stone. It is a soothing and alleviating experience to simply enjoy the natural sounds.

FIGURE 321: Plan of Chapel showing the indoor / outdoor connections.

# Social Noise

## Target Description:

Excessive noise levels must be avoided. Noise must be limited to acceptable levels. The Ambient sound level in the Auditorium may not exceed 20 dBA. (T&A, 1998:193) Adequate audibility is crucial to the success of the Auditorium, Chapel and Conference room. It is not to be compromised.

## How is this Achieved?

Inside the Auditorium measures must be taken to ensure excellent acoustics. The walls and roof of the Auditorium are required to have a weight of 4 to 5 kg/sqm to reduce externally generated noise. (T&A, 1998:193) Acoustic panels and sound reflectors can be used on the inside. However, the Auditorium space is so large that one cannot rely on the natural dispersion of sound, but will have to utilize electronic sound. According to Frans van der Merwe, a musician and acoustic guide, says that an auditorium must either rely on natural sound or electronic sound. To design for both is not possible. (Van der Merwe, 2003) An acoustic consultant must do the positioning of the electrical speakers.

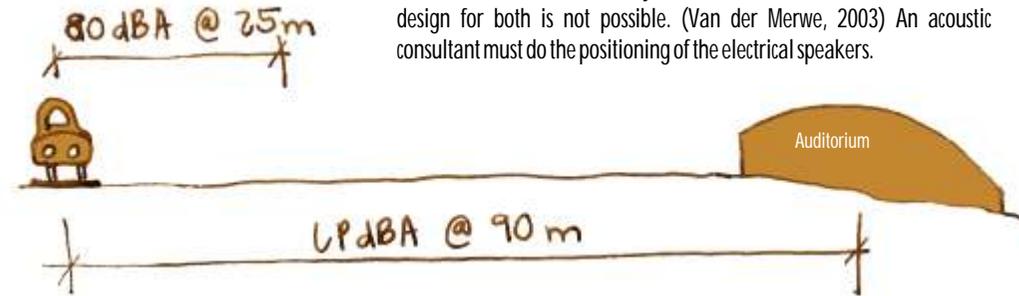
## Prioritization

Facility		
Foyer	3	Essential 5
Auditorium	5	High Req 4
Bookstore	2	Medium Req 3
Kitchen	1	Low Req 2
Hall	4	No Req 1
Chapel	5	
Memorial W.	-	
Coffee Shop	2	

Calculating the traffic noise of De Villbois Street:

Say that the traffic noise is 80 dBA at its worst 25 meters from the road. The distance between the road and the Auditorium is on average 90 meters.

Calculate the ambient noise level at the Auditorium...assume that the only reduction in noise level is due to geometric divergence.



$$L_{P_{x2}} = L_{P_{x1}} - 10 \log(K_x) \quad [dBA] \quad K_x = \frac{x_2}{x_1}$$

$$L_{P_{90m}} = L_{P_{25m}} - 10 \log\left(\frac{90}{25}\right)$$

$$L_{P_{90m}} = 80 \text{ dBA} - 5,6$$

$$L_{P_{90m}} = 74 \text{ dBA}$$

From the calculation it is evident that the ambient noise level still needs to drop with 54 dBA to reach the required level. This will be achieved by means of the construction and materials used for the roof, walls and floors of the Auditorium. Good wall solutions are:

- a masonry cavity wall with 220 leaves with a 120 cavity where the walls are plastered with no ties and fitted with 2 x 50 glass wool insulation
- 200 mm dense reinforced concrete
- 300mm plastered rough concrete.

# Thermal Comfort Social

How is this Achieved?

In summer, passive combined with mechanical and natural ventilation, will be used in the Auditorium. Adjustable openings must be provided in the Auditorium when it is unnecessary to use mechanical ventilation. In winter warm air can be distributed into the auditorium from underneath the seats and onto the stage. Heating in winter will benefit the users but is not such a high priority in South Africa's moderate climate. The body heat from the people might be enough to heat the Auditorium slightly. Heating will only be installed if the budget allows for it because it is not a high priority. Another method to control the internal temperature in winter, is to install a trombe wall on the northern side of the auditorium. This possibility is discussed under Environmental Control later on.

The ventilation control room must be positioned such that the ambient noise levels produced do not disturb the activities inside the buildings. Sound absorptive paneling might be necessary to dampen the noise levels.

Target Description:

Thermal comfort is more important in some spaces than others. It is crucial that the level of thermal comfort inside the Auditorium is sufficient in winter and in summer. If the occupants feel comfortable it will enhance the effectiveness of the message. Happy and comfortable people will listen and concentrate better.

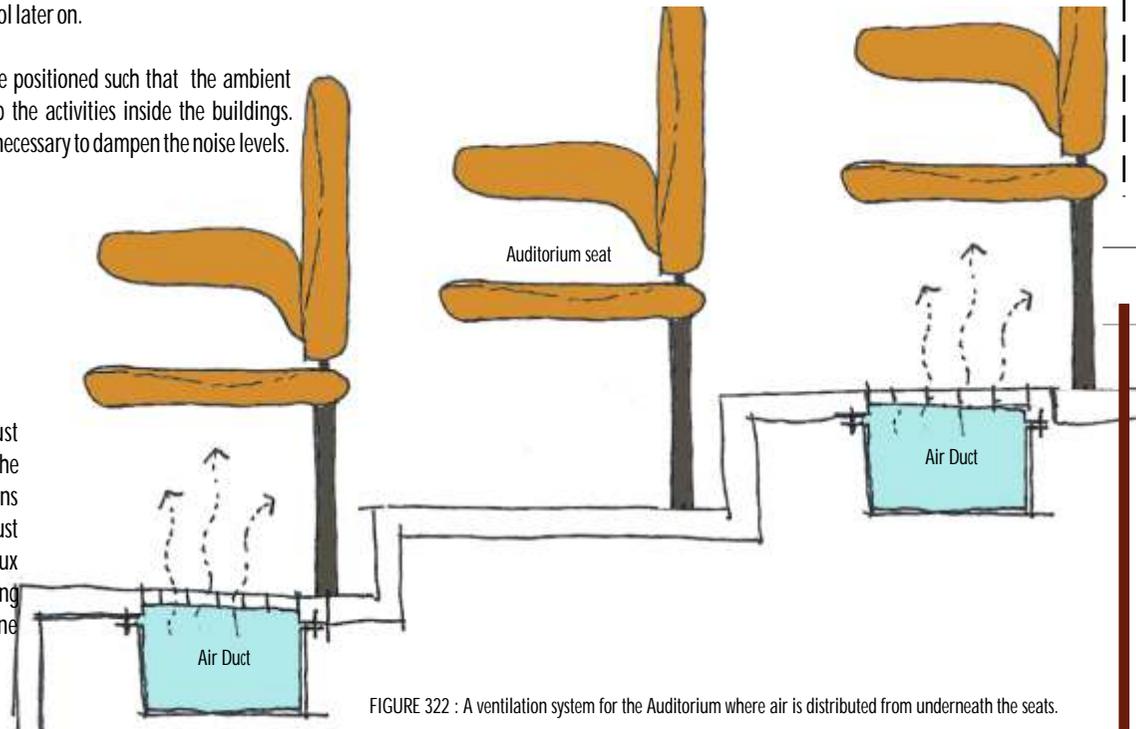


FIGURE 322 : A ventilation system for the Auditorium where air is distributed from underneath the seats.

The air inside all spaces must continually be of high quality. The ventilation speed, whether by means of natural or mechanical means, must be sufficient to ensure a decent influx of fresh air. Do calculations during design finalization to determine effective ventilation.

## Prioritization

	Essential	High Req	Medium Req	Low Req	No Req
Facility	5	4	3	2	1
Foyer			3		
Auditorium		4			
Bookstore			2		
Kitchen			3		
Hall			3		
Chapel			3		
Memorial W.			-		
Coffee Shop			3		

# Social Ventilation

How is this Achieved?

Natural ventilation is when air moves through openings in the building facades such as windows and doors. In warm climates like Pretoria 'through ventilation' is used. (T&A, 1998:385) Windows to be used for natural ventilation should be easy to open while maintaining high security levels. In the Foyer, the user can be made aware of natural ventilation by a slight breeze at times; this will form part of the atmosphere. The positioning of adjustable openings must be thoroughly planned. Air moving at a speed of less than 0.1m/s will result in stuffiness. (T&A, 1998:385) It is however important to remember that with natural ventilation there would be the appearance of dust. A compromise is made to save energy, used for cooling or heating, and to rather slightly increase the cleaning costs.

Ventilation rates:

For a Church building, a ventilation rate of 3,5 liters / second / person is required. (SABS 0400, 1990:112) For maximum use, there will be 10 000 people in the Auditorium. Thus 35 000 liters / second is necessary. An adequate ventilation rate not producing too much noise will be 4m/s.

$$35\ 000\ \text{lit/s} = 35\ \text{m}^3/\text{s}$$

$$\frac{35\ \text{m}^3/\text{s}}{4\ \text{m/s}} = 9\ \text{m}^2\ \text{duct space}$$

The required area of duct releasing fresh air is 9 square meters. This means that the total area of all the outlets into the auditorium must be 9 square meters.

Target Description:

The required ventilation must be provided naturally as far as possible, except in the Auditorium, Kitchen and Conference room where passive ventilation will be used.

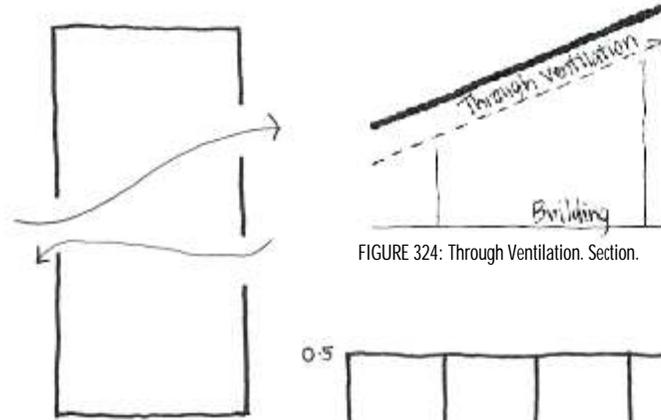


FIGURE 323: Through Ventilation. Plan

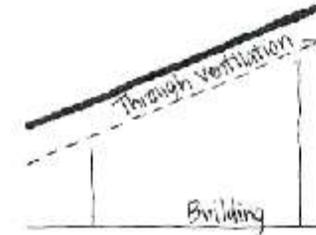


FIGURE 324: Through Ventilation. Section.

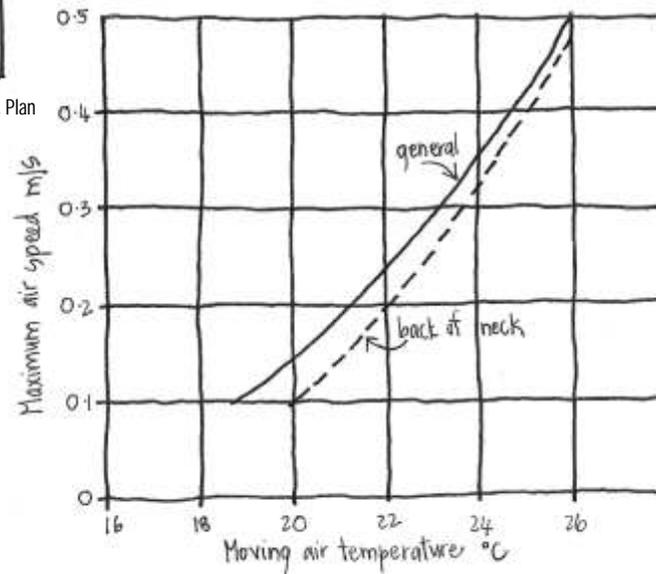


FIGURE 325: Acceptable Air Speeds

## Prioritization

Facility		
Foyer	4	Essential 5
Auditorium	5	High Req 4
Bookstore	4	Medium Req 3
Kitchen	5	Low Req 2
Hall	4	No Req 1
Chapel	4	
Memorial W.	-	
Coffee shop	4	

FIGURE 323: Through Ventilation. Plan. (T&A, 1998: 386)

FIGURE 324: Through Ventilation. Section.(T&A, 1998: 386)

FIGURE 325: Acceptable Air Speeds (t&a, 1998:386)

Theatre

Social

2. How can this be applied to the Church?

It will cost a tremendous amount of money to install fully mechanical ventilation and cooling in the Auditorium. It will also use an extensive amount of energy to operate. Passive ventilation is definitely the answer. Since the foyer space is very large, enough space for bed rocks is available.

1. This Theater uses passive ventilation for the cooling of the auditorium. The system is simple but very effective. Air is taken in by vertical air ducts through the suction of the internal fans. The air moves through the fans and a filter where it is then forced through a bed of rocks underneath the foyer. The rocks will cool the air before it enters the auditorium to a more suitable temperature. The cool air enters the auditorium from underneath the seats. As soon as this air is heated it will move upwards and leave the building through the extraction ducts. The minimum amount of energy is required in the process.

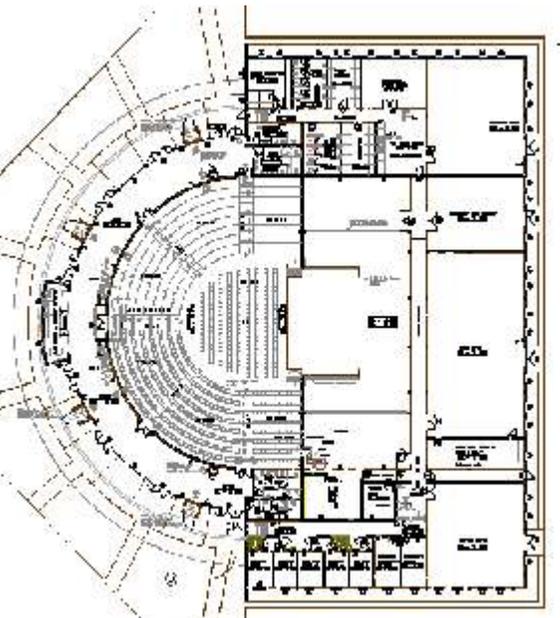


FIGURE 326: Plan of the auditorium.

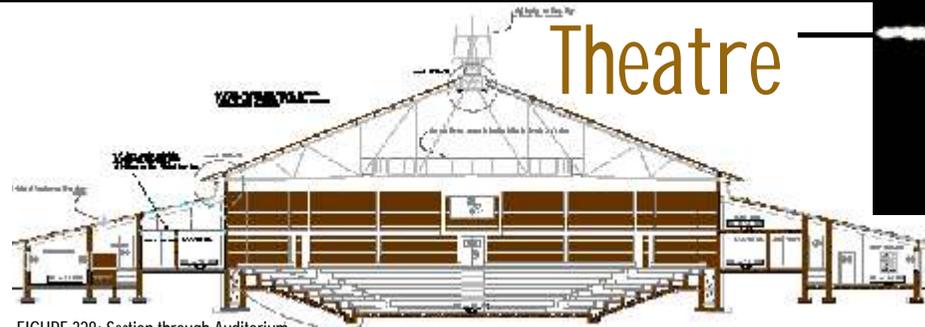


FIGURE 328: Section through Auditorium..

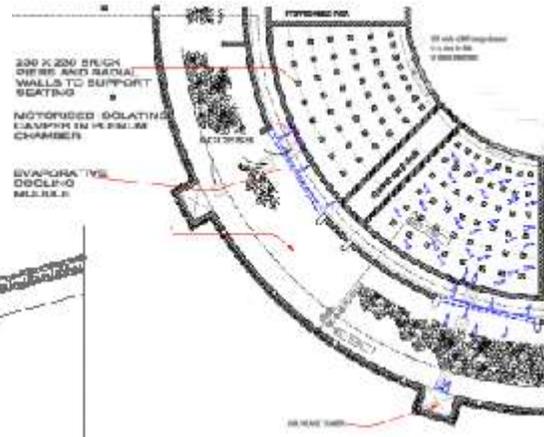


FIGURE 329: Detail of the ventilation system in plan.

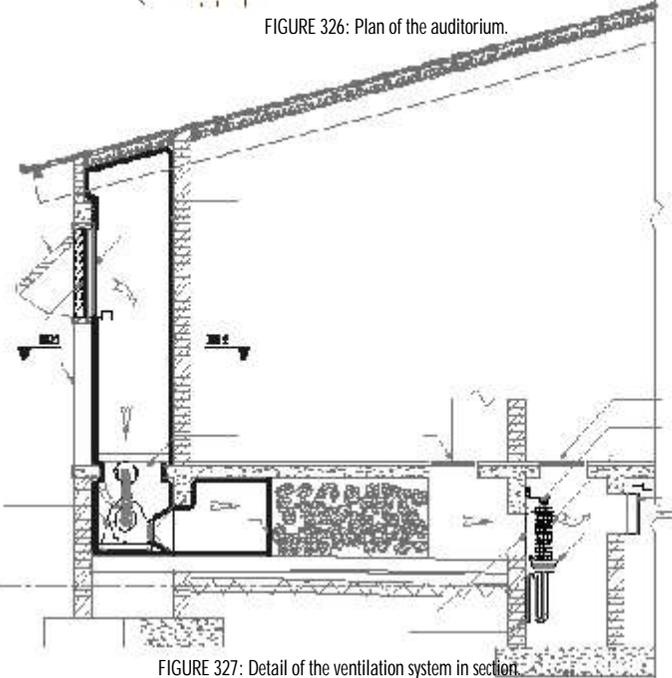


FIGURE 327: Detail of the ventilation system in section.



FIGURE 330: The rock bed during Construction.

FIGURE 326: Plan of the auditorium. (Nel, 2002:37)

FIGURE 327: Section through Auditorium. (Nel, 2002:38)

FIGURE 328: Detail of the ventilation system in plan. (Nel, 2002:40)

FIGURE 329: Detail of the ventilation system in section. (Nel, 2002:39)

FIGURE 330: The rock bed during Construction. (Nel, 2002:41)

# Social

1. This system makes use of the temperature of the ground. 2 to 3 meters under ground the temperature seems to stabilize and becomes constant.

2. How can this be applied to the Church building?

The current concept design suggests a large open space in front of the foyer. This will be an ideal length of space to implement this system. The system will work even better if this earth cooling is combined with cooling by means of rock beds.

The earth tube can be situated close to the Chapel and run all the way to the foyer. There the air can be forced over a rock bed. The result would be very favorable temperatures inside the building.



FIGURE 333: View from the bottom.

An air duct is situated 46 meters uphill from the building. This earth tube has a diameter of 610mm and is buried at a depth of 1 800mm. It brings cooled air in summer and warmed air in winter.

The air moves into the tube and is either cooled or warmed by the constant temperature of the soil. When it enters the building, the temperature is much more acceptable.

Passive Ventilation

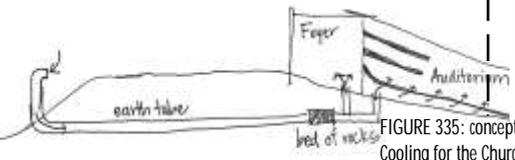


FIGURE 335: concept of passive Cooling for the Church.

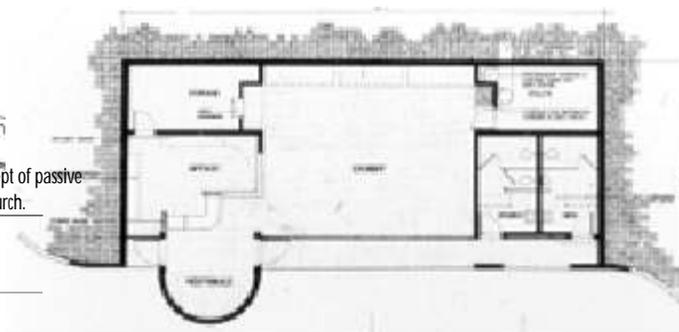


FIGURE 331: Plan.

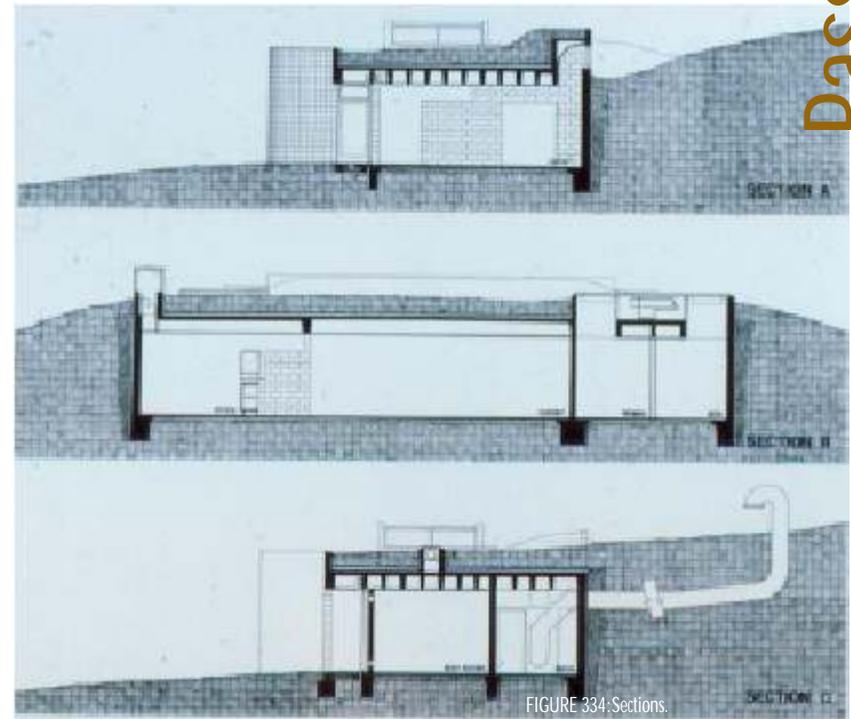


FIGURE 334: Sections.



FIGURE 332: View from the top showing air duct.

FIGURE 298: Plan. (Reynolds, 2002:38)

FIGURE 299: View from the top showing air duct. (Reynolds, 2002:38)

FIGURE 300: View from the bottom. (Reynolds, 2002:38)

FIGURE 301: Sections. (Reynolds, 2002:38)

How is this Achieved?

Safety and security of the people: it is of utmost importance that the users of the site feel safe and secure at any point on the site, whether inside or outside the buildings. This can only be achieved by means of thorough property security, eyes inside buildings looking to the outside every now and then, open circulation routes and adequate lighting in the evenings. Persons coming at night to visit the Memorial Wall, Prayer Garden or Chapel must feel safe. The designer suggests that local community members are employed to patrol the site since it is such a big area to cover.

Safety and security of the property: The main entrances onto the site must provide security checkpoints with the practicability of closing up. It would be ideal to have a complete open site but this is certainly not advisable in South Africa, thus the site will have to be fenced.

The buildings must be fitted with alarm systems and lockable entrances. All glazing must be secured either by means of burglar bars or thick safety glass. During the day the foyer, Chapel, Bookstore and Coffee shop will be open. Parts of the Chapel can be left open at night for people visiting the memorial wall and prayer garden. Sufficient lighting during the evenings is crucial to minimize crime.

# Safety & Security

Target Description:

Although safety and security is a very high priority, spaces like the foyer and chapel require being open most of the time to accommodate people wanting to pray and so forth. Distinguish between personal safety and security and the safety and security of the property.

# Social

Prioritization

Essential	5		
High Req	4	Foyer	4
High Req	4	Auditorium	5
High Req	4	Bookstore	5
Medium Req	3	Kitchen	5
Medium Req	3	Hall	4
Low Req	2	Chapel	4
Low Req	2	Memorial W.	-
No Req	1	Coffee Shop	5

# Social

# Furniture & Fittings

### Target Description:

The furniture and fittings should be of good quality and serve its purpose well. People must feel comfortable in all spaces, inside and outside.

### How is this Achieved?

The selected furniture must correspond to human proportions. The Foyer and Auditorium will for example have different kinds of furniture and fittings. Furniture materials must have relatively low maintenance while still be comfortable. Seating in the Auditorium must be soft and comfortable, while seating in the foyer can consist of harder materials since it will be used for shorter time periods. The selection of furniture and fittings will influence the character of the interior and exterior. Exterior furniture must be hard wearing and durable.

The furniture and fittings must also remind the user of the religious setting. The use of light and views to the outside can greatly enhance the experience when using the furniture. The photograph of Tadao Ando's building gives a good idea of what is to be achieved. See FIGURE 303.

### Prioritization

Facility		
Foyer	4	Essential 5
Auditorium	5	High Req 4
Bookstore	3	Medium Req 3
Kitchen	4	Low Req 2
Hall	3	No Req 1
Chapel	5	
Memorial W.	4	
Coffee shop	4	

190

FIGURE 336: Hall on the first floor of I House. Ando. (Ando, 12:46)

FIGURE 337: Birch Plywood Oiled Chairs by Maarten van Severen. (Architectural Design, 2002:44)

FIGURE 338: Worm Bench by Michael Ryan. (Architectural Design, 2002:71)

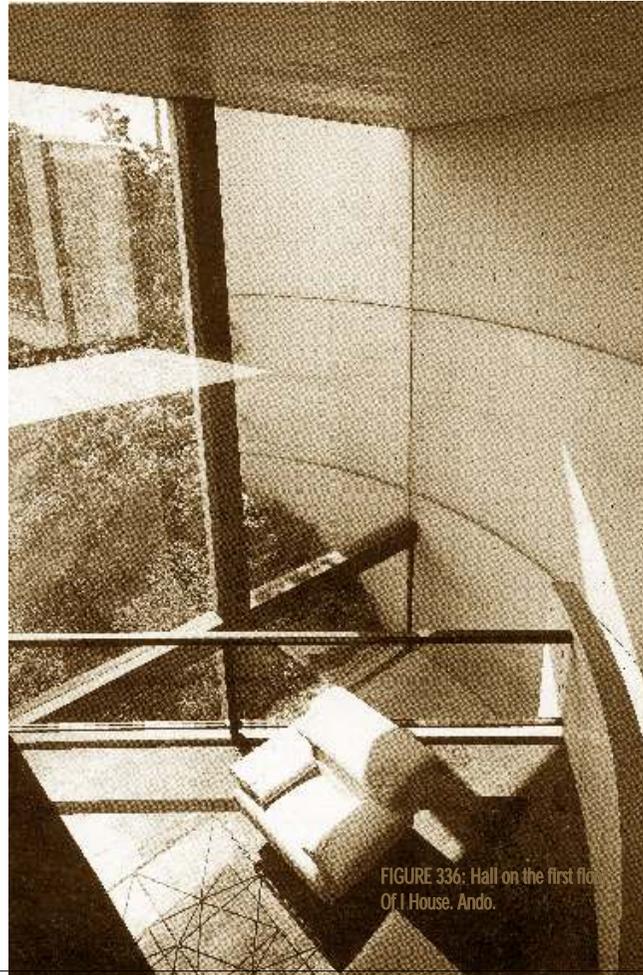


FIGURE 336: Hall on the first floor of I House. Ando.



FIGURE 337: Birch Plywood Oiled Chairs by Maarten van Severen.



FIGURE 338: Worm Bench by Michael Ryan.

**BASELINE: Social - Environmental - Economic**



# Lavatories & Kitchens

# Social

### How is this Achieved?

Most of the lavatories will be positioned adjacent to the foyer space. These will serve the Conference room, Auditorium, Bookstore, Foyer Space and Biblical garden. Separate Lavatories must be installed proximate to the Chapel, Kitchen and Hall for the activities in these spaces. Preferably the lavatories must be provided with natural ventilation where possible, otherwise mechanical ventilation.

The industrial Kitchen will be used to cater for activities in the Auditorium, Foyer, Hall, Bookstore, Conference room, Chapel and Coffee Shop. The Kitchen must link directly with the Foyer, Hall and Coffee Shop for easy transfer of food and drink between the kitchen and these spaces. The kitchen must also be provided with an outside service entrance for deliveries and removals accessible for delivery vehicles.

### Target Description:

An adequate number of lavatories for women and men should be provided. It must be positioned close to a circulation route for easy access and direction. Make provision for disabled persons.

The large industrial kitchen should be adequately furnished with the necessary fittings and have proper circulation and access for staff and service vehicles.

Fitting	Foyer/Auditorium		Hall		Chapel		Kitchen Unisex
	Men	Women	Men	Women	Men	Women	
Water closet	20	40	2	7	2	7	2
Hand washbasin	20	20	5	5	5	5	1
Urinal	20	-	5	-	5	-	-
Disabled Provision	1	1	1	1	1	1	-

TABLE 12: Number of sanitary fittings required based on SABS 0400.

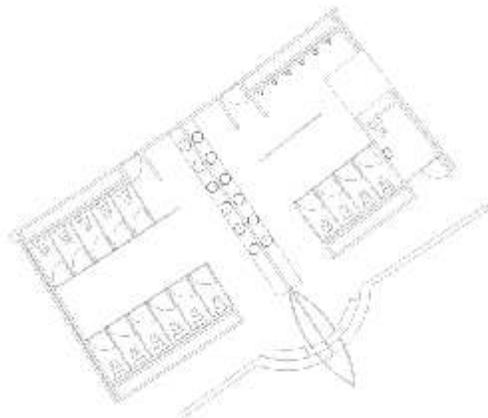


FIGURE 339: Ablution in the Auditorium



FIGURE 340: Ablution outside the Chapel

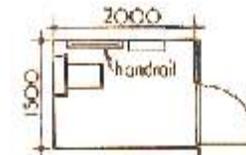


FIGURE 341: Recommended WC cubicles for The wheelchair user.

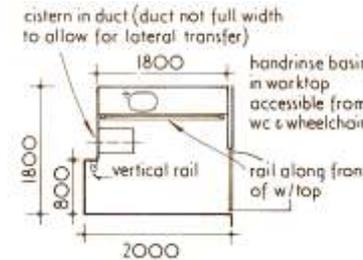


FIGURE 342: An alternative solution for the wheelchair user.

### Prioritization

	Facility	
Essential 5	Foyer	5
High Req 4	Auditorium	5
Medium Req 3	Bookstore	3
Low Req 2	Kitchen	4
	Hall	4
	Chapel	5
No Req 1	Memorial W.	-
	Coffee Shop	-

FIGURE 341: Recommended WC cubicles for The wheelchair user. (T&A, 1998:342)

FIGURE 342: An alternative solution for the wheelchair user. (T&A, 1998:342)

# Economic



To build economically is important for most projects and it is no different here. But this is definitely not a low budget scheme. It is a priority to make use of local contractors and materials although there is a leeway to utilize outside expertise. One must not forget that this is a building for the glory of God and will require excellent craftsmanship necessarily costing money.

Prioritization

Facility		
Foyer	4	Essential 5
Auditorium	3	High Req 4
Bookstore	5	Medium Req 3
Kitchen	3	Low Req 2
Hall	5	No Req 1
Chapel	5	
Memorial W.	5	
Coffee Shop	4	

## Local Contractors

Target Description:

As far as the design allows, local contractors part of the congregation, must be employed.

How is this Achieved?

Details and building techniques must be primarily within the scope of local business. The only exceptions would be specialized elements in the Auditorium which can't be bought in Tswane.

## Local Materials

Target Description:

Most of the materials specified must be locally available.

How is this Achieved?

The use of unusual materials should be limited. However, this should not limit the overall design and character making of a religious building. Using local materials will limit the traveling distances for the distributors of construction materials and thus save money and energy.

## Local Components

Target Description:

Where components are specified in the design, it should primarily be available on the local market.

How is this Achieved?

Use components locally available. This will be of great benefit when maintenance and repairs are needed. The specialists will be close and money and time will be saved.

# Structure Economic

How is this Achieved?

The structure of the Auditorium will determine its appearance and degree of multiple uses. Preferably the roof structure must allow for an open roof span to limit areas where sight lines to the stage are obscured. The congregation is not yet large enough to fill the whole space for ten thousand people. Therefore the designer suggests that the structure for a gallery is designed and only added when the extra seats are needed. This will prevent the feeling of wasted space while the congregation is still growing.

Suggestions for a roof structure of this size will be a domed structure with aluminum trusses, a concrete or steel structure. The advantage of the aluminum is its lightness compared to the steel. The depth of aluminum trusses would be far less than that of similar steel trusses. The disadvantage of steel or aluminum is their coldness. It would be preferred to use warmer materials like timber on the inside. Timber can always be added as nonstructural elements to cover the structure whether it is steel, concrete or aluminum.

The floor and walling structure would primarily be of concrete for its load bearing capacity and texture.



This Structure consists of large concrete gutter trusses spanning the longest distances. This will result in an excessively large structure and is not favorable.

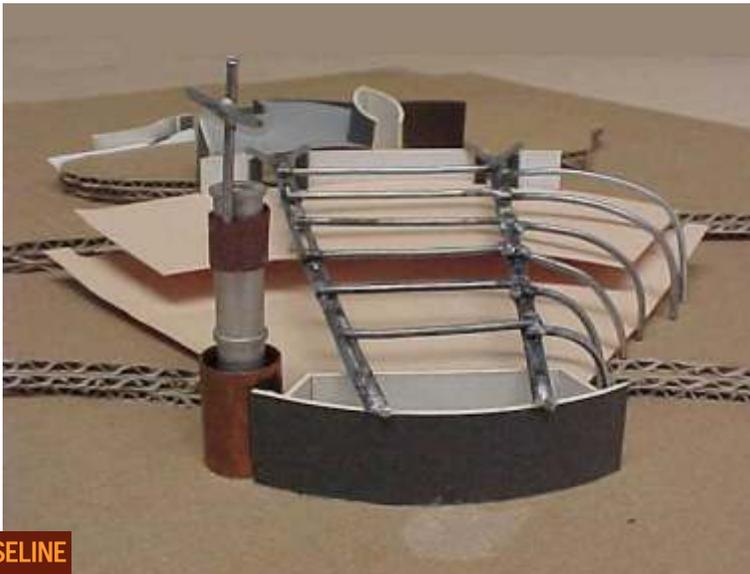


Target Description:

The structure of the auditorium must accommodate future expansion in the form of an added or extended gallery. Although the structure should be economic, it must also provide for multiple usages.



The second structure comprises of two large steel space frames and smaller curved space frames in between. This structure will also be large but will create more opportunities than the concrete beam structure. The space frame will allow for interesting openings in the roof for light penetration. The actual frame can be covered with timber for a warmer finish. The two main beams will then also be used as rainwater collectors..



Prioritization

Essential	High Req	Medium Req	Low Req	No Req	Facility	
5	4	3	2	1	Foyer	4
					Auditorium	5
					Bookstore	4
					Kitchen	4
					Hall	4
					Chapel	5
					Memorial W.	3
					Coffee Shop	4

FIGURES 343-347: Photographs of structural models. (Steyn, 2003d)

# Economic

## Roof Structure of the Chapel

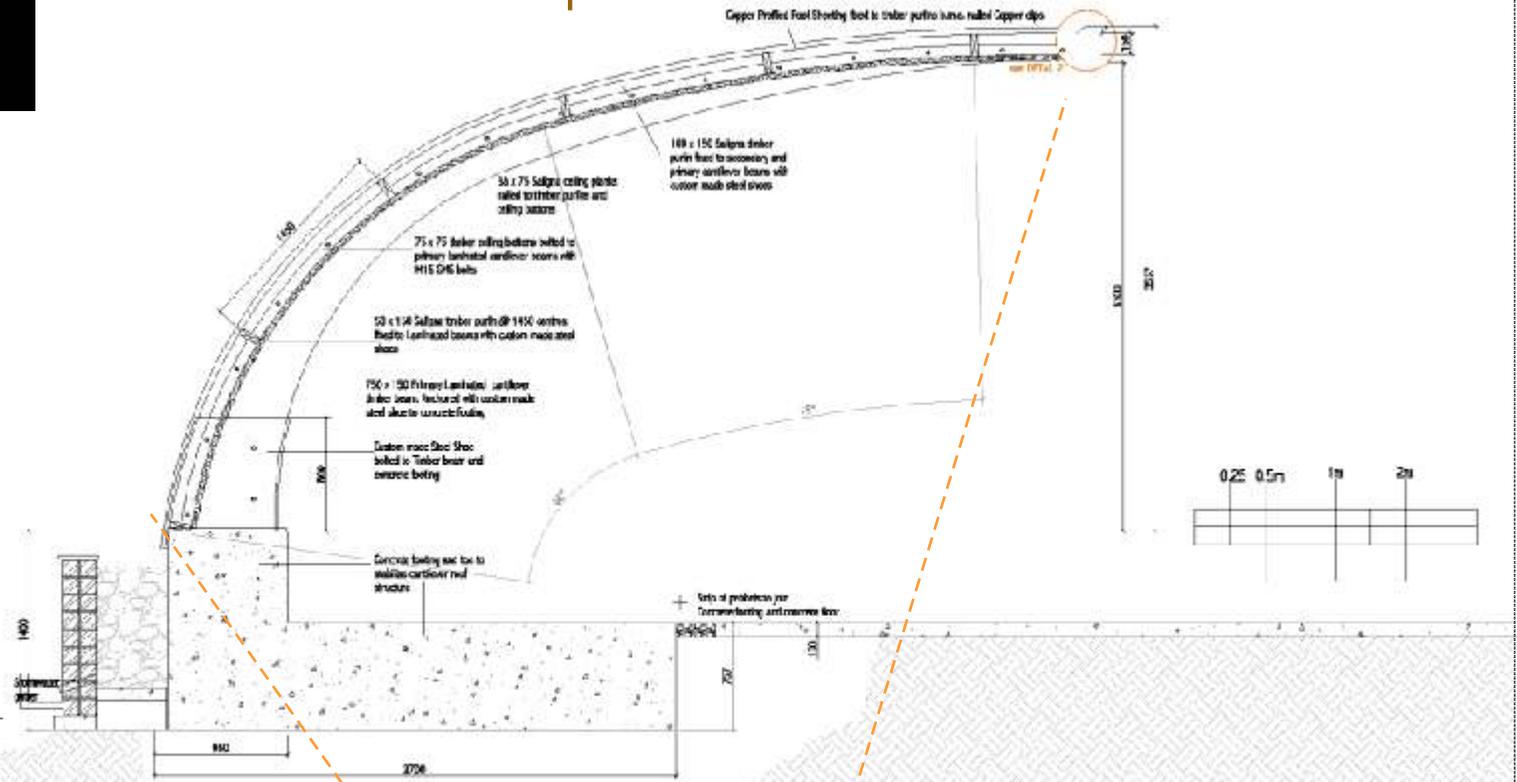


Figure 348: Detail section through the Chapel roof showing the cantilever timber structure. See A0 drawing page 6 no 6.2

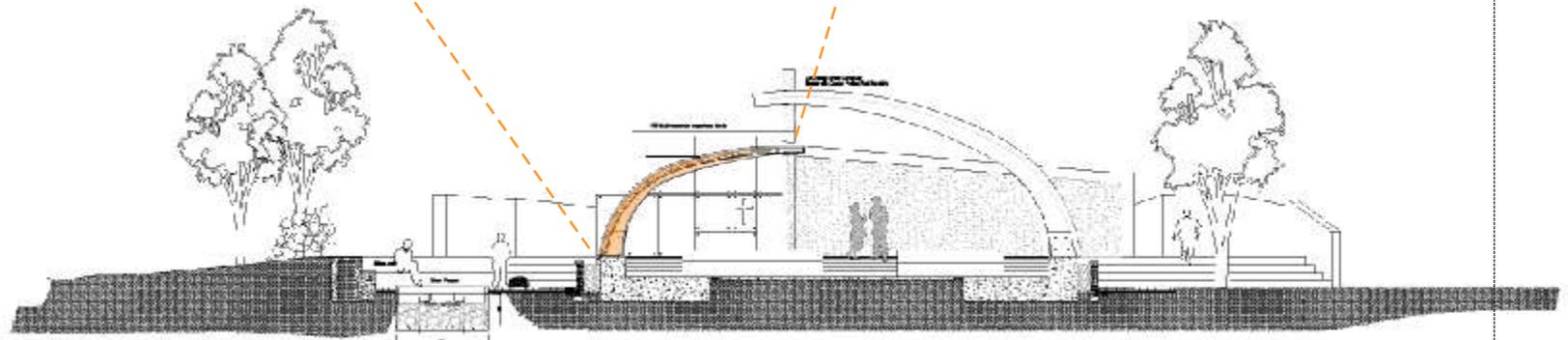
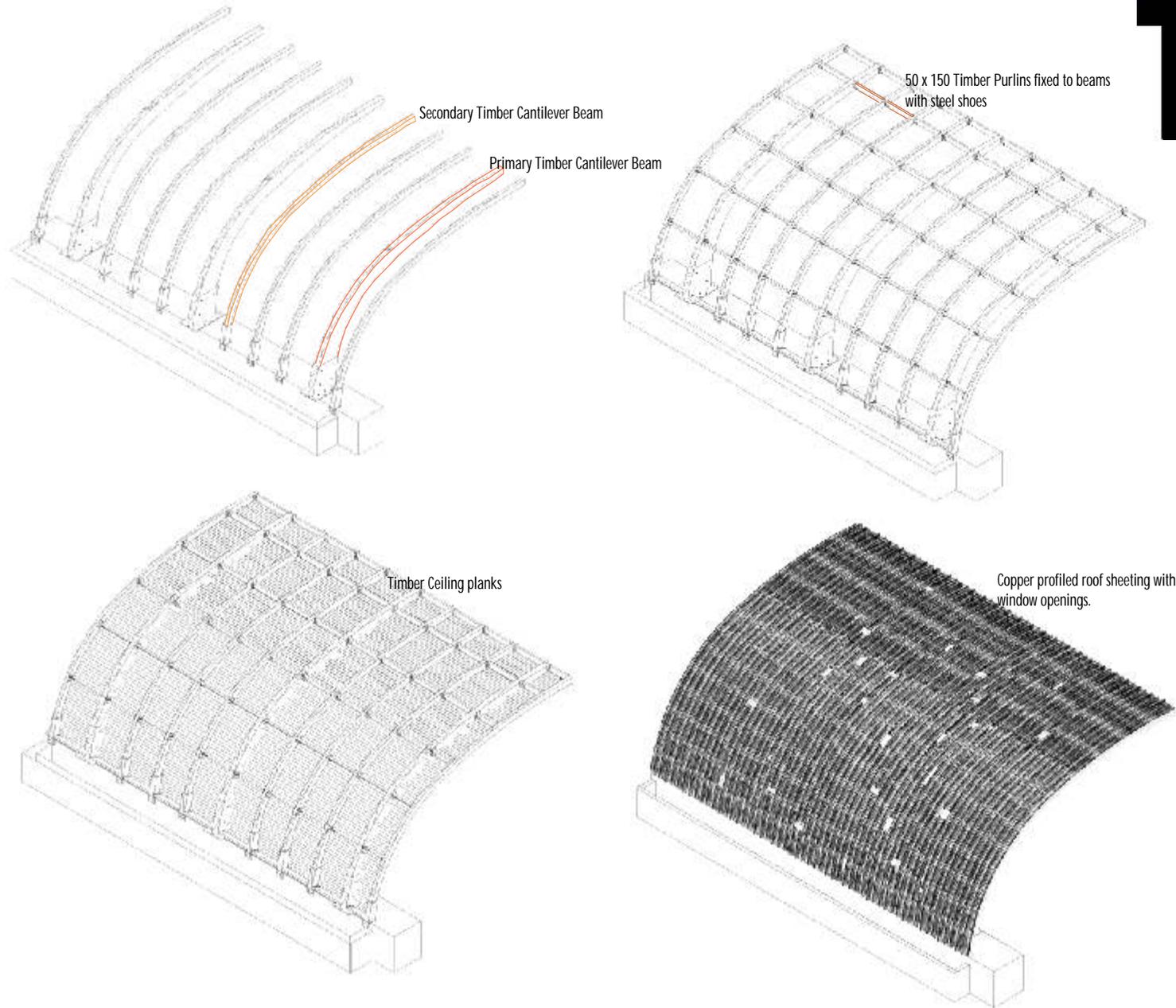


Figure 349: Section through the Chapel. See A0 drawing page 5 no 5.2

# Economic



The roof structure consists predominantly of timber members.

1. The primary and secondary laminated cantilever beams are bolted to the concrete base with custom made steel shoes.
2. Timber purlins are bolted in between the cantilever beams with steel shoe hangers.
3. Steel tension rods are spanned in between the members
4. Timber ceiling planks are nailed to the structure from the inside
5. The copper profiled sheeting is clipped onto the outside.
6. The copper box windows are positioned and welded to the copper roof (see A0 drawing page 6)

FIGURES 350-353: Showing the roof structure of the Chapel.

# Environmental



# Environmental Control

Target Description:

Where necessary, environmental control for ventilation and solar control must be provided. Consider security issues.

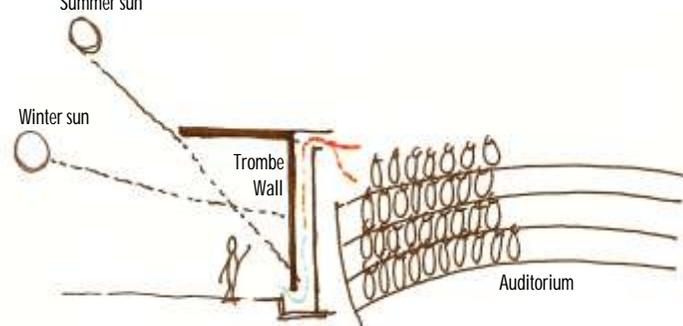


FIGURE 354: Section through the Northern side of the Auditorium, a Trombe Wall.

How is this Achieved?

Determine the effects of the sun's path. The angle of the sun will influence the character of a place by casting hard or soft shadows and has the underlying potential to create the desired effects. This will be very useful in the place making of the Foyer space, Chapel, Memorial wall and Biblical garden.

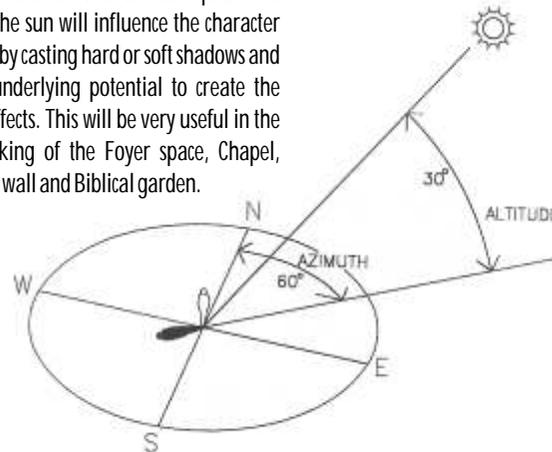


FIGURE 355: Diagram showing the difference between altitude and azimuth.

How is this Achieved?

Some windows must be operable for allowing natural ventilation. Security provision should not subtract from the design articulation. Areas with direct sunlight must be provided with solar control devices where the direct sun is unfavorable

To respond to environmental control with passive design is the most sustainable way. A Trombe Wall on the northern side of the Auditorium will heat air in winter with direct sunlight falling on the dark wall. The altitude of the sun in summer will keep the sun from shining directly onto the wall.

# Sun Angles

Target Description:

The position of the sun and its effect on the buildings and landscape must be considered when identifying the areas in need of solar control devices.

**JOHANNESBURG & PRETORIA** Latitude (nearest) 26° South  
Both cities taken as longitude 25.5°E (Add 4.5° or 18 minutes to solar time)

Solar times	06.00	08.00	10.00	12.00	14.00	16.00	18.00
Clock times	06.18	08.18	10.18	12.18	14.18	16.18	18.18
Azimuth 21/12	112E	101E	91E	0	91W	101W	112W
Altitude 21/12	10	35	63	88	63	35	10
Azimuth 21/3 & 9	90E	76E	53E	0	53W	76W	90W
Altitude 21/3 & 9	0	26	51	65	51	26	0
Azimuth 21/6	-	55E	34E	0	34W	55W	-
Altitude 21/6	-	14	32	40	32	14	-

FIGURE 356: Sun Angles for Pretoria and Johannesburg.

FIGURE 355: Diagram showing the difference between altitude and azimuth. (Napier, 2000: 4.5.1)

FIGURE 356: Sun Angles for Pretoria and Johannesburg. (Napier, 2000: 4.10)

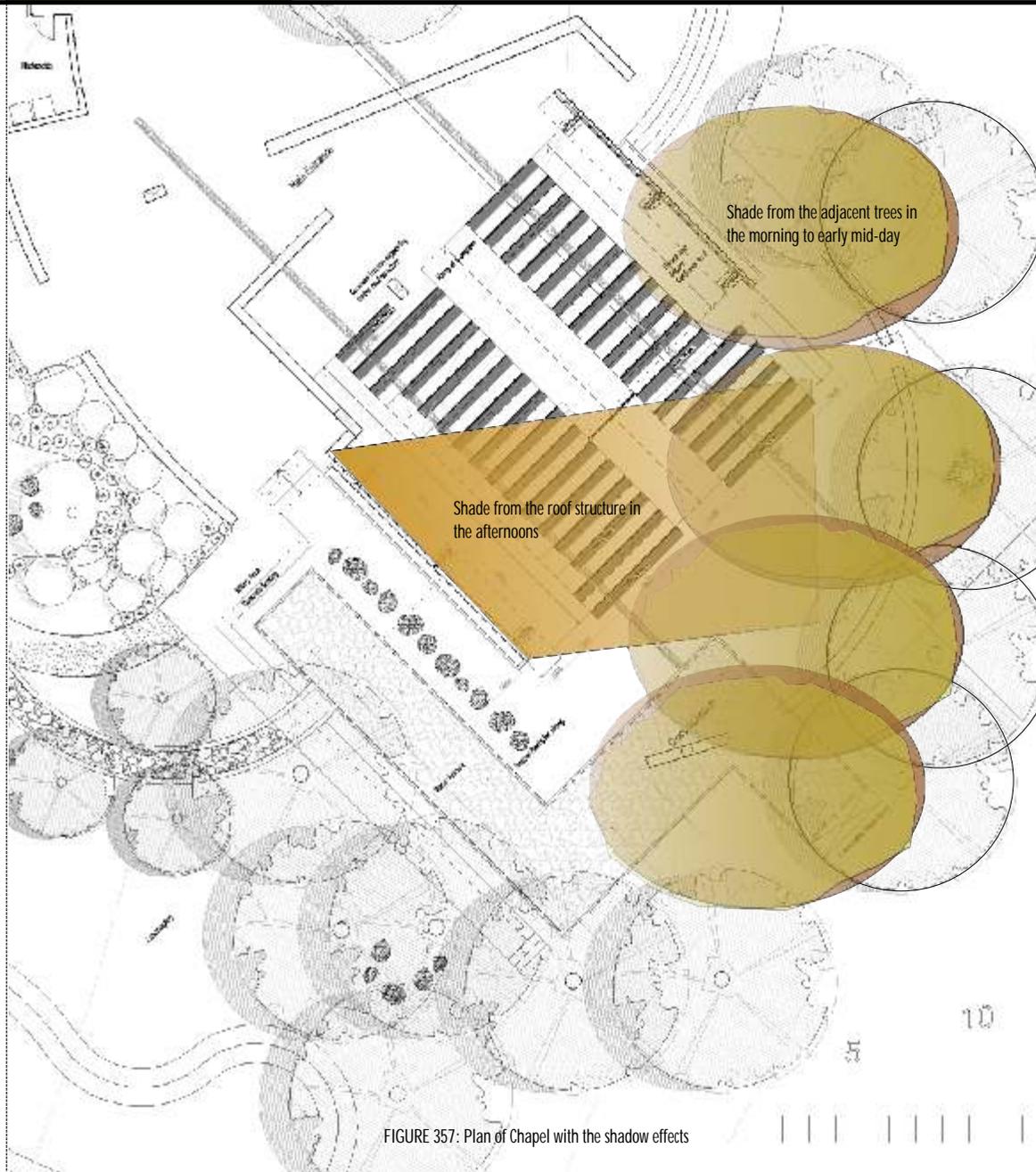


FIGURE 357: Plan of Chapel with the shadow effects

The front part of the Chapel is open to the sky and will thus have a problem with direct sunlight. Sun angles have been used to solve the problem. The trees surrounding the north eastern side will aid in providing shade during the morning. This is ideal for a morning wedding.

Weddings in the afternoon usually start after 15h00. The cantilever roof of the Chapel will then provide enough shade for the activities.

As the trees grow and enlarge their foliage diameter, the branches would grow over the walls of the front part of the Chapel and provide shade throughout the day. Thus a light structure of branches and leaves becomes the chapel's roof.

The trees providing shade contribute to the user's experience of natural elements. The sound of rustling leaves when the wind blows will be heard when sitting in the Chapel. Many Christians say that they experience God more intensely when surrounded by natural elements. When sitting inside the Chapel, one's experience of God's presence is intense and refreshing.

# Environmental

## Use of Energy

Target Description:

Limit the use of energy by maximizing the use of passive building design concerning cooling, heating and lighting. Where these systems are not adequate, use energy efficient devices.

How is this Achieved?

The auditorium and conference room are the only spaces depending fully on electrical lighting and partly on mechanical ventilation. The remaining spaces must make use of available day lighting and the sun as heating source. Irregular openings for natural light penetrating the Auditorium will create a religious atmosphere and aid with visibility during a power failure. Louvers for lighting control is essential for performance situations where a dark auditorium is required. These louvers can be manipulated either with a mechanical system or manually.

The kitchen will also require a large quantity of energy in the form of electricity; therefore energy efficient devices should be put to use. Gas cooking is much more sustainable than electrical cooking appliances.

Solar panels are very expensive and deliver small quantities of electricity in relation to the initial cost, but do not contribute as much pollution to the environment as grid electricity from coal. Although this is an option for an alternative energy source, it is not worth the money spent on installation and making it theft proof.

Another method to minimize the use of energy is to make use of gas heaters for hand washbasins, rather than using an electrical geyser. Previously heating the water by means of a water heater in the sun, and then distributing it to the gas heaters will advance the saving of energy.

A tremendous amount of energy will be saved if passive cooling and heating is used for the Auditorium and Foyer. (As previously discussed under Thermal Comfort.) The most energy will be used in the operation of the fans.

The ablution block and kitchenette outside the Chapel lends itself perfectly to install energy efficient devices. The ablution block and kitchen can use solar water heaters installed on the flat concrete roof, with gas heaters inside. The kitchenette can make use of a gas stove.

### Prioritization

Facility		
Foyer	4	Essential 5
Auditorium	4	High Req 4
Bookstore	4	Medium Req 3
Kitchen	5	Low Req 2
Hall	4	No Req 1
Chapel	4	
Memorial W.	-	
Coffee shop	4	

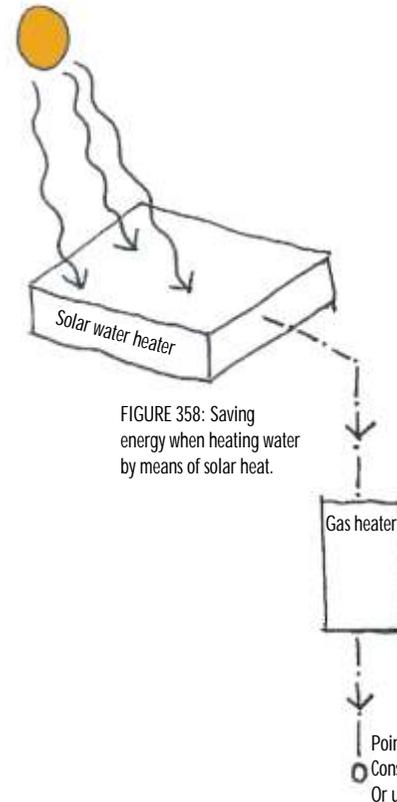


FIGURE 358: Saving energy when heating water by means of solar heat.

How is this Achieved?

Watering the landscape as well as kitchen related activities will use the greatest amount of water. A wonderful community project can be implemented with the use of greywater. Each family must bring 5 liters of greywater each time the family attends a service. This water can be used to water the landscape. This will also enlighten the community members to use biodegradable agents for cleaning purposes. Say 2 000 families attend a service, 10 000 liters of water is recycled. Water can also be saved by installing water efficient plumbing devices, utilizing rainwater and re-using some of the water. The water efficient devices will regulate the quantities of water. Greywater from the building can be reused to flush water closets. This will decrease the amount of municipal water used and therefore also the costs. South Africa is a water poor country and a Church with 30 000 members is a very good place to make people aware and to start saving natural water resources.

How is this Achieved?

The roofs of the buildings must be designed to collect all rainwater into storage tanks. According to the month of maximum rainfall, November, the storage tank must at least accommodate 300 (three hundred) cubic meters of water. The collected water can then be run through a filter and used for flushing water closets and watering the landscape, it will also be suitable for drinking. Predominantly drinking water will come from the municipal connection. Storm water must also be collected and used for irrigation and can be a source for the external water features.

Device	Conventional	Efficient
Water Closets	10 liters	Below 6 liters
Taps	0.25 - 0.3 l/s	0.03 - 0.17 l/s
Showers	0.4 - 0.7 l/s	0.2 l/s
Dishwashers	45 - 68 l/wash	26.5 l/wash

TABLE 13: Comparison between conventional and water efficient devices.

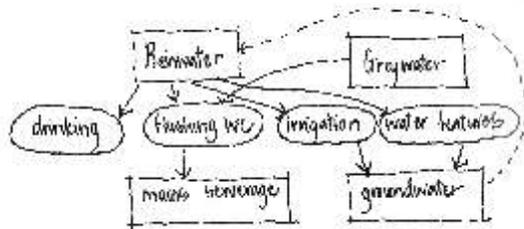


FIGURE 360: The Rainwater and Greywater systems.

# Use of Water

Target Description:

Water consumption must be kept to a reasonable minimum.



FIGURE 359: Water efficient devices. A sildi valve and a flow regulator.

# Rainwater

Target Description:

Rainwater must be collected and stored in containers to be used for irrigation and domestic purposes.

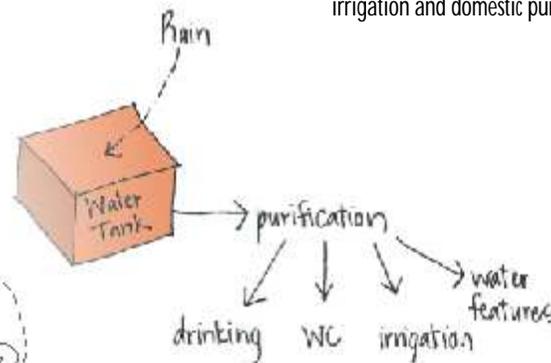


FIGURE 361: The Rainwater systems.

Amount of rainwater  
 Summer max 375 mm  
 Winter max 250 mm  
625 mm / annum  
 November max 138 mm  
 Roof area ± 2000 m<sup>2</sup>  
 0,138 x 2000 = 276 m<sup>3</sup> water  
 ≈ 300 m<sup>3</sup>

# Environmental

Prioritization

	Facility	
Essential 5	Foyer	4
High Req 4	Auditorium	4
Medium Req 3	Bookstore	2
Low Req 2	Kitchen	5
	Hall	4
	Chapel	4
No Req 1	Memorial W.	-
	Coffee Shop	4

FIGURE 359: Water efficient devices. A sildi valve and flow regulator.

TABLE 13: Comparison between conventional and water efficient devices. (Gibberd, 2002)



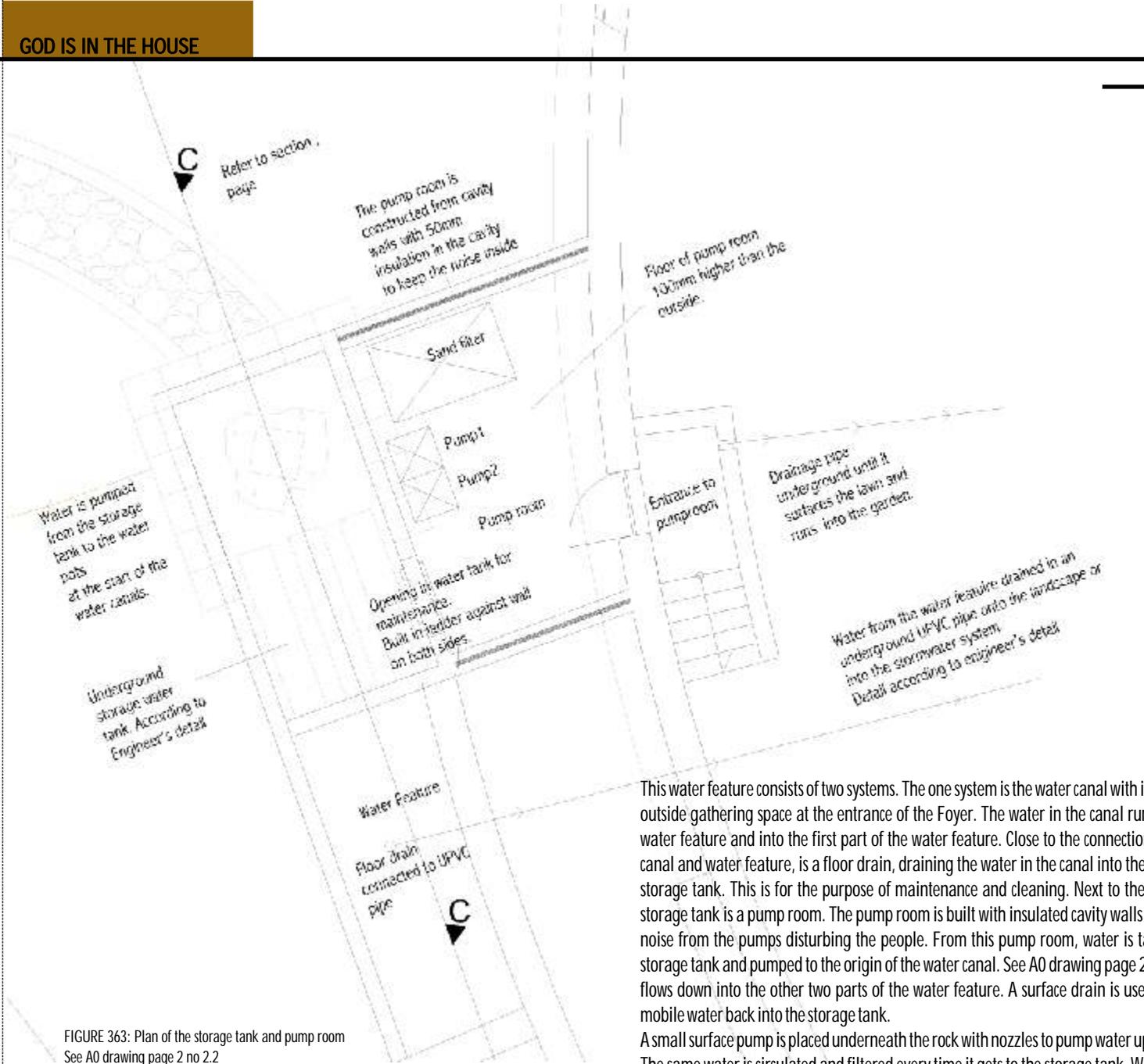


FIGURE 363: Plan of the storage tank and pump room  
See A0 drawing page 2 no 2.2

This water feature consists of two systems. The one system is the water canal with its origin at the outside gathering space at the entrance of the Foyer. The water in the canal runs down to the water feature and into the first part of the water feature. Close to the connection between the canal and water feature, is a floor drain, draining the water in the canal into the underground storage tank. This is for the purpose of maintenance and cleaning. Next to the underground storage tank is a pump room. The pump room is built with insulated cavity walls to prevent the noise from the pumps disturbing the people. From this pump room, water is taken from the storage tank and pumped to the origin of the water canal. See A0 drawing page 2 no 2.1. Water flows down into the other two parts of the water feature. A surface drain is used to drain the mobile water back into the storage tank.

A small surface pump is placed underneath the rock with nozzles to pump water up into the rock. The same water is circulated and filtered every time it gets to the storage tank. Water is lost due to evaporation. A tap is installed to fill the storage tank to the required level.

# Environmental

## Organic Waste

### Target Description:

Organic waste generated primarily by the Kitchen and Coffee Shop must be collected and turned into compost to be used for improvement of the soil. All congregation members must contribute to the recycling of organic waste.

### How is this Achieved?

A compost heap must be built in a suitable position and then all organic material from the buildings, landscape, and congregation members can be dumped onto this heap. The positioning must not interfere with other activities or the comfort of occupants. If the compost is tended to on a regular basis, a rich fertilizer is created, very favorable for plants.

The congregation members must be educated in the advantage of recycling organic waste. There must be a system implemented where the members can bring their load of organic waste, in the form of kitchen produced waste and garden produced waste, and deliver it to the Church site for making compost. If most of the people contribute on a regular basis, lovely rich soil fertilizer will be produced. This is very necessary for the landscaping of the Church site since the soil is of poor quality. Needless to say, the amount of compost produced will exceed the needs of the Church site and the church members can in return for their effort, come and collect compost for their personal uses.

### Prioritization

Facility		
Foyer	-	Essential 5
Auditorium	-	High Req 4
Bookstore	4	Medium Req 3
Kitchen	5	Low Req 2
Hall	-	No Req 1
Chapel	-	
Memorial W.	-	
Coffee Shop	5	

## Inorganic Waste

### Target Description:

All inorganic waste in the form of glass, plastic and paper must be collected in separate containers and taken for recycling. Here it is also important to inform the members on their duty as good citizens of South Africa, to recycle their inorganic waste.

### How is this Achieved?

Areas of waste generation like the Kitchen, Coffee Shop, Bookstore, Foyer and Hall should have 4 different containers for assortment at the point of waste generation. These small containers can then be emptied into larger containers on site. The best position for these large containers would be at the delivery point of the kitchen. Members of the congregation must be encouraged to bring their waste (organic and inorganic) and add it to the containers. This waste is then sold to the recyclers, creating an extra income for the Church. A tremendous amount of waste can be collected from a congregation of 30 000 members. It will be a huge contribution to the conservation of natural resources.

## How is this Achieved?

Cut and fill must be kept to a minimum by identifying the most suitable positions for the various buildings. The already sloping parts can be used for the Auditorium, needing to be at a slope. The more level areas will be more suitable for parking.

The Geological composition of the landscape will influence the type of foundations to be used. The Site is underlain by shale with local siltstone of the Daspoort Stage, Pretoria series of the Transvaal system. (ARQ Specialist Engineers. 2000:3) This is taken from the Geotechnical report done for the Woodlands Lifestyle Estate development. Thus there might be slight variations in soil profiles on the Church site. For the purpose of this project the information concerning the soil composition in this report will be used.

Due to the abundant presence of gravels and the intact structure of the soil profiles, no apparently visible collapsible soils were identified. The Church site does not border directly onto the Moreletaspruit, diminishing the occurrence of alluvial clay deposits. Potential expansiveness is minimal. (ARQ Specialist Engineers. 2000:4)

The weathered residual soil and very soft rock shale might prove relatively difficult to compact. (ARQ Specialist Engineers. 2000:6)

## Foundation proposal:

Structures should be founded on reinforced strip footings, with reinforcement built into masonry. Adequate site drainage should be ensured and plumbing precautions implemented to prevent the accidental saturation of the subsoil. (ARQ Specialist Engineers. 2000:11)

The soil composition will also determine the kind of vegetation that will grow in the soil. The soil type requires a lot of fertilizer to be added for proper landscaping. The fertilizer will be in the form of the compost made from the collected organic material.

# Landscape Inputs

## Target Description:

The form and composition of the geological formations of the landscape should minimally be altered by cut and fill. Adding fertilizer will increase the soil potential.

## Environmental

# Environmental Planting

## Target Description:

Landscaping must add to the religious atmosphere and consist of indigenous and biblical plants. Parking must have extensive planting to soften the visual impact.

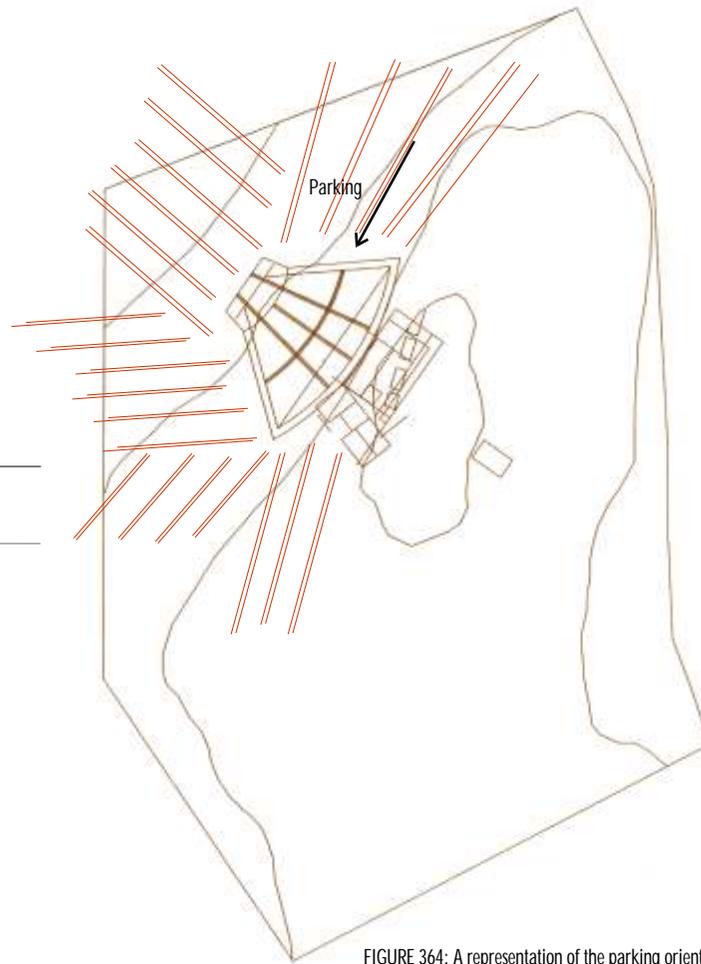


FIGURE 364: A representation of the parking orientation. Only part of the parking is shown.

## How is this Achieved?

The arrangement and layout of the chosen plants must create spaces for prayer, meditation and social interaction. It must also create a visual barrier at the edges of the parking areas. Such a large area of landscaping will require an irrigation system. Indigenous plants require less maintenance and watering than exotic vegetation. However, a route with biblical plants will greatly add to the religious education of the congregation and it will contribute to the desired atmosphere.

For a Church building seating 10 000 (ten thousand) people, a monstrous amount of parking bays is required. In this case the number is calculated by working with a ratio of 2 people per vehicle, thus 5 000 (five thousand) parking bays. The parking bays including the circulation pathways will cover an area of 13 000 square meters. In other words 13 hectares. The site is only 18 hectares, leaving 5 hectares for all the buildings and exterior spaces. Because the client wants to continue with future additions to the site, one must consider to decrease the area used for parking. The only solution for this would be to go underground or into the air. It is also true that the building would not be filled with ten thousand people from the start. But this is its capacity and one must design for the optimum capacity. It is advisable to construct a smaller number hard parking, for example two thousand, and create soft parking for the rest. As the congregation grows, the number for hard parking can be increased.

Because the greatest part of the site will be covered with parking, one has to think of it as a landscaping element. It was discussed earlier that the approach to the building is very important in creating a religious atmosphere. The layout of the parking must facilitate this intention. A solution to establish this is shown in FIGURE 364. Here the parking is orientated such that the direction of movement looks onto the building. Trees are planted on either side of the walkways. A system can be implemented where each family in the congregation adopts a tree and tends it. This will encourage community participation and social interaction. The people can for example bring more greywater from their home and water their tree. This action will also lend itself to the education of the youngsters, building a sustainable community.

The landscape has many trees, grass to sit on and various plants with Biblical meaning.

The progression of spaces created by the landscape features must facilitate either individual contemplation or group interaction. The meandering pedestrian walkways and the water canals, create many 'islands' in the garden. These 'islands' are either public or semi-private, and some private. It is important to create different areas for people with different needs. People must use the garden in what ever way pleases them. Individuals can sit on a rock or on the grass in the private areas, or even groups can come together and interact in a quiet spot. The ideal is to create diversity in the design and layout of elements.

A future development for this project is a proposed Therapy Center. If the Therapy Center is positioned next to this garden, the garden can be used as medium in counseling and thus becomes a healing garden.

From the congregation came the suggestion of a picnic site somewhere in this project. This garden would also offer a wonderful picnic. It might seem strange to have people engage in outdoor family activities right next to a memorial Wall. But it is precisely what needs to be done. In the Christian faith, death is merely the entrance to eternal life, and therefore as much a part of life as birth. Young children must be taught that death is not something to fear.

These semi-private areas in the garden are used by individuals to spend time with the Lord in prayer and reading the Word, and by groups to converse on the Word or simply to socialize. It becomes a protective space where no pretenses are necessary. The Lord looks straight into one's heart. One can hide nothing from Him.



FIGURE 365: Plan of the garden illustrating the spaces created

The calm of the garden will wash onto the users. Gardens with water are frequently mentioned in the Bible. Adam and Eve live in the Garden of Eden before they sin. This garden also has a river. Genesis 10:2,15 A river watering the garden flowed from Eden. The Lord God took the man and put him in the garden to work it and take care of it.' It is God's plan from the beginning for man to be in the garden, peacefully living from it and lovingly tending to it.

In Numbers 24: 6-7 Balaam speaks of the blessings that will come to the Israelites as they settle in their new land. 'Like valleys they spread out, like gardens beside a river, like aloes planted by the Lord, like cedars beside the waters.

'Water will flow from their buckets; their seed will have abundant water.' (NIV, 1998:226) Jesus himself often goes to a garden alone to spend time in prayer with his Father. A garden is a symbol of rejuvenation because of the time spent with the Lord. Isaiah 58:11 'The Lord God will guide you always; He will satisfy your needs in a sun-scorched land and will strengthen your frame. You will be like a well-watered garden, like a spring whose waters never fail.' (NIV, 1998:1102)

# Environmental Materials

How is this Achieved?

The various materials must be compared in terms of the above-mentioned aspects.

## Prioritization

Facility		
Foyer	4	Essential 5
Auditorium	3	High Req 4
Bookstore	3	
Kitchen	3	Medium Req 3
Hall	4	
Chapel	4	Low Req 2
Memorial W.	5	
Coffee shop	4	No Req 1

### Target Description:

The selection of materials should be based on the embodied energy and water consumption during production and construction, the local availability of it and the potential symbolic meaning in it.

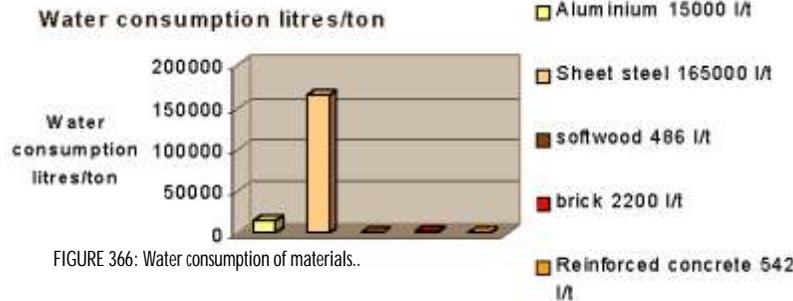


FIGURE 366: Water consumption of materials.

### Water consumption litres/ton

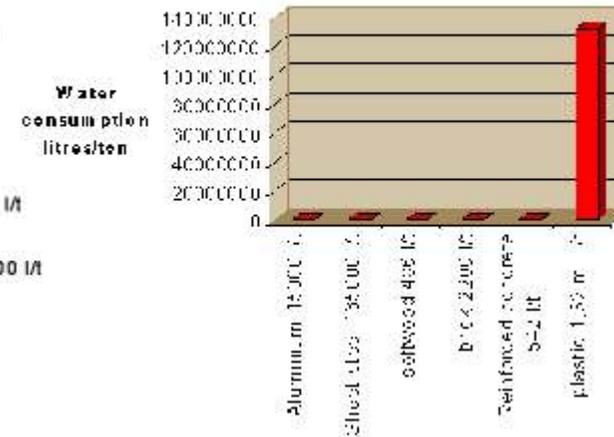


FIGURE 367: Water consumption of materials.

206

FIGURES 366-369: (Gibberd, 2002)

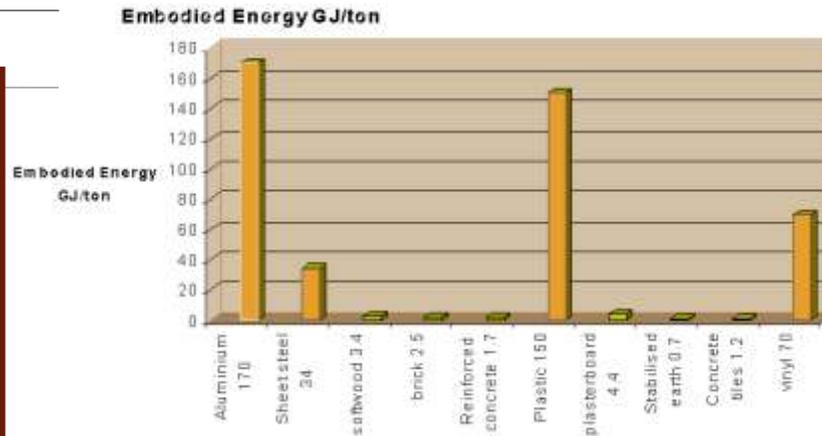


FIGURE 368: Embodied energy of materials.

### Lowest Water consumption and accompanying embodied energy

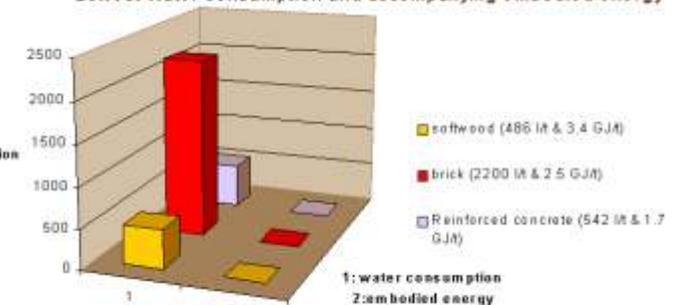


FIGURE 369: Embodied energy and Water consumption of materials.

From the graphs it is evident that concrete, timber and bricks are the best choice of materials concerning embodied energy and water consumption. For this design, the designer believes that raw materials and textures will enhance the ambience of a religious architectural character.

The user must be aware of the different materials used in the building. The materials as such will speak symbolism. In the briefing document research on the symbolic meaning of materials showed that timber, bronze and silver were very prominent materials to be used. Timber symbolizes Jesus as the Son of God in His true humanity. Timber is also a reminder of the immortality of one's soul. Brass shows the voluntary suffering of Jesus. He suffered, was tested and withstood the judgement. Silver points to purity and correctness. Materials can also act as a catalyst for the 4 symbolic colours: red, blue, purple and white.

Materials are one of the greatest contributors to the architectural impact of a space. The users should want to put out their hands and feel the texture. Concrete is a wonderful material with which to vary textures and colours. It is a medium of art. It lends itself to engravings and interesting patterns. Many people experience concrete to be cold and sterile. But the designer should use it that it create a warm and welcoming atmosphere. By adding pigment to the concrete a huge difference in appearance can be obtained.

This type of building, a Church, lends itself to the unexpected use of materials. This wonderful opportunity should not be missed.



FIGURE 370: An interesting wall finish, done by Pieter Mathews.

# Materials continue

From the new book of Pieter Mathews, *Architecture*, one can get a very good idea of the different finishes for walls and floors. There are many different material finishes, each having its own character.

To understand the texture of a material, light is required. The texture and resulting impression of it will vary according to the amount and quality of light. A coarse texture will reflect less light and create a warmer and more relaxed space. (Mathews, 2003)



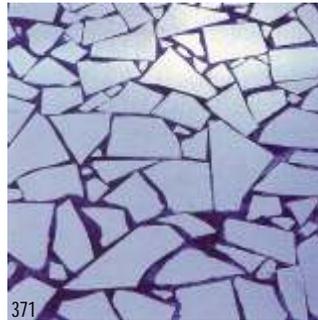
375



379



376



371



372



377



378



380



373



374

FIGURE 371: Irregular ceramic tiles. (Mathews, 2003:19)

FIGURE 372: Cement slush finish. (Mathews, 2003:62)

FIGURE 373: Bagged soldier finish. (Mathews, 2003:69)

FIGURE 374: Concrete wall and titanium dioxide plaster. (Mathews, 2003:58)

FIGURE 375: Copper cladding. (Mathews, 2003:95)

FIGURE 376: Plaster carving (Mathews, 2003:99)

FIGURE 377: Tile floor. (Mathews, 2003:29)

FIGURE 378: Plaster imprint. (Mathews, 2003:72)

FIGURE 379: Timber and concrete floor. (Mathews, 2003:50)

FIGURE 380: Daubing finish. (Mathews, 2003:38)

There are a few ceremonies practiced in the Protestant Church. These include Communion, Weddings, Funerals and Baptism. These are all events where a group of people will take part. The number of people can range from a very small group gathering in the Chapel to a very large group assembling in the Auditorium.

Communion is a ceremony where the whole congregation takes part in the remembrance of what Jesus did for each human being on earth. It is symbolized by drinking a bit of wine and eating a piece of bread. This can also be in the form of a complete meal. This ceremony will most probably take place in the Auditorium, unless only a small group prefers the intimacy of the Chapel.

## Communion

Usually the table with the tokens (wine and bread), is positioned on or close to the stage. From this point the tokens will be distributed to the congregation. Thus it is essential that there be adequate circulation space around the stage and table.

In such a large gathering of Christians this ceremony can become very long because each individual must receive both the tokens. Therefore it is necessary to allow for quick and easy distribution of tokens. The space around the stage must allow for at least more than two people to pass each other.

Weddings are joyous celebrations and usually consist of a service in the Auditorium or Chapel and a function afterwards in the Hall or somewhere else. It can be held in the morning, afternoon or evening. The number of people attending can range from as little as 10 to more than 250.

## Weddings

The Chapel is suitable for weddings with up to 250 people. A small wedding will feel lost inside the huge Auditorium. The Chapel is specifically positioned apart from the rest of the buildings to give it some significance. It is orientated to have a view across the Biblical garden. It should house an atmosphere of peace, rest and tranquility.

The wedding ceremony would first take place in the Chapel. There should be enough space in front of the Chapel for the various ceremonial activities and instruments. The Biblical garden would prove excellent for photographs. After the ceremony in the Chapel, the newly wed couple and their guests could gather in the Hall. The Kitchen is adequate to cater for a large number of people. The Hall can accommodate up to 250 guests. If space for more than 250 guests is required, the boundary wall between the Coffee Shop and Hall is removed and the available space increased. These two venues connect with the garden just outside and can also act as an overflow space for guests. Many a successful wedding was held under trees in a garden.

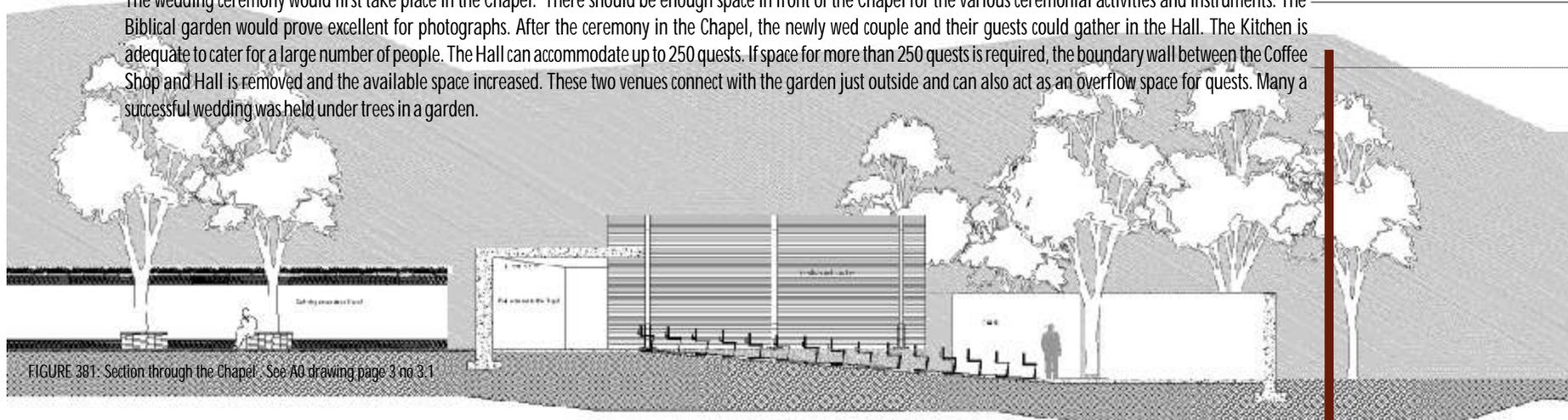


FIGURE 381: Section through the Chapel - See A0 drawing page 3 and 3.1

# Ceremonies

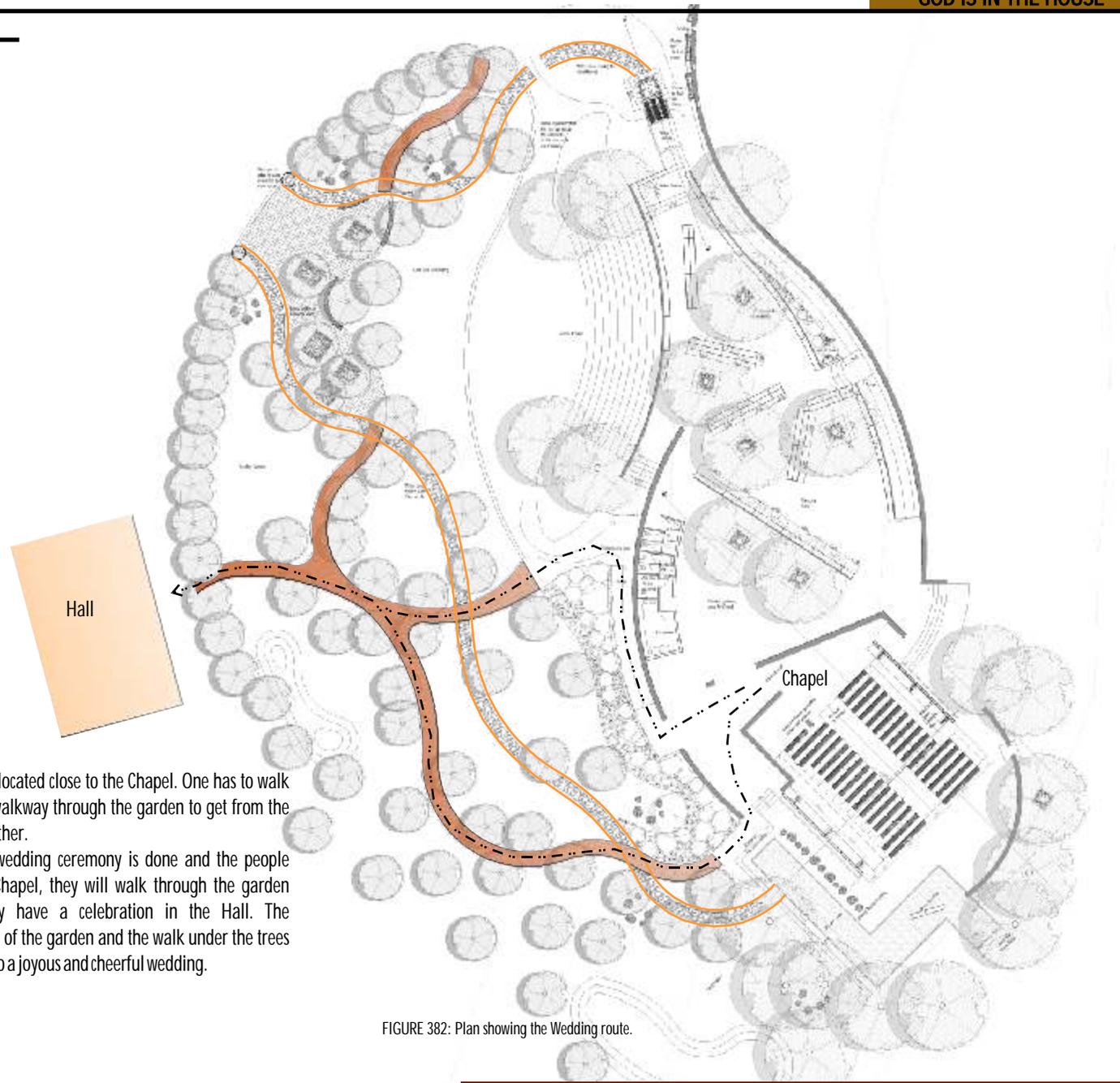


FIGURE 382: Plan showing the Wedding route.

The Hall is located close to the Chapel. One has to walk along the walkway through the garden to get from the one to the other.

When the wedding ceremony is done and the people leave the Chapel, they will walk through the garden before they have a celebration in the Hall. The appearance of the garden and the walk under the trees contribute to a joyous and cheerful wedding.

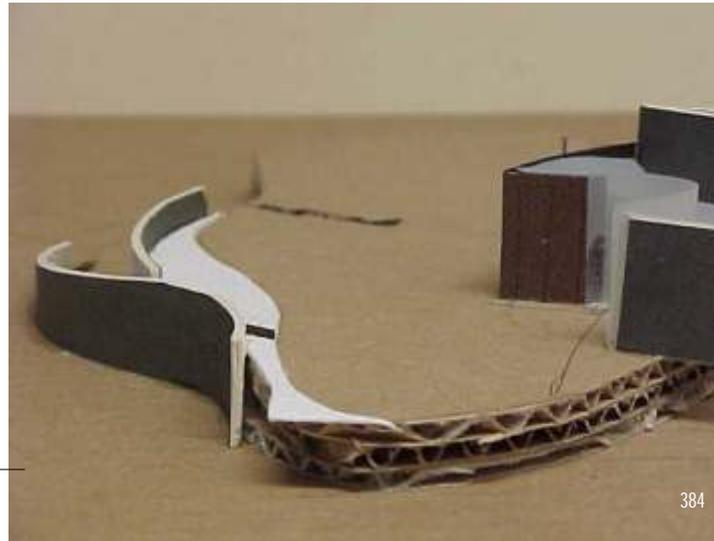


# Ceremonies

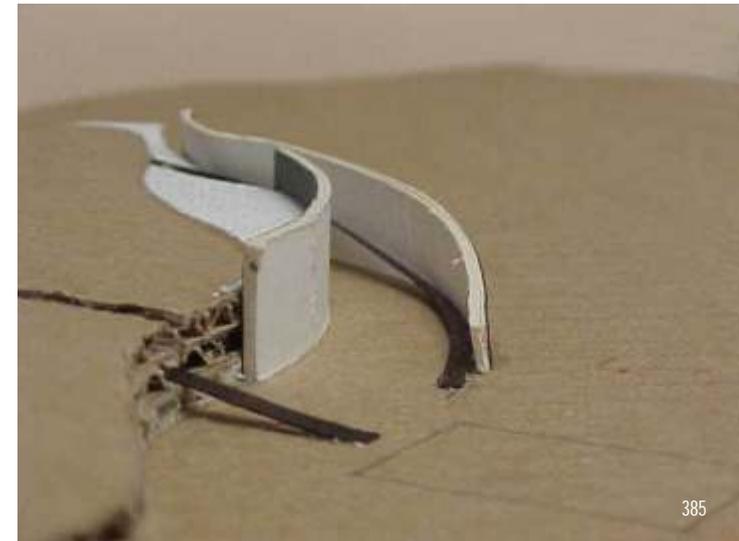
## Memorial Wall

Available spaces in cemeteries for new graves are becoming more and more scarce to find. The concept of a Memorial Wall is relatively new in South Africa but readily preferred these days. A wall takes up far less space than a cemetery and can be placed on the church-site, conveniently close and safe.

A memorial wall replaces an actual gravesite in a cemetery. In stead of inearthing the corpse, the body is cremated and the resulting ash placed in a small box. This box is equivalent to the coffin. The small box is securely placed inside a niche in the memorial wall. A memorial plate, similar to that of a gravestone, is engraved with the deceased person's details. A Memorial Wall is thus an unusual thick wall with numerous openings inside where boxes with ash are placed inside and kept for a period of at least 30 years.



384



385

212

FIGURES 384,385: Photographs of the concept model showing the memorial wall.

FIGURES 386-388: Photographs of second concept model.



386



387



388

BASELINE: Social - Environmental - Economic

# Memorial Wall

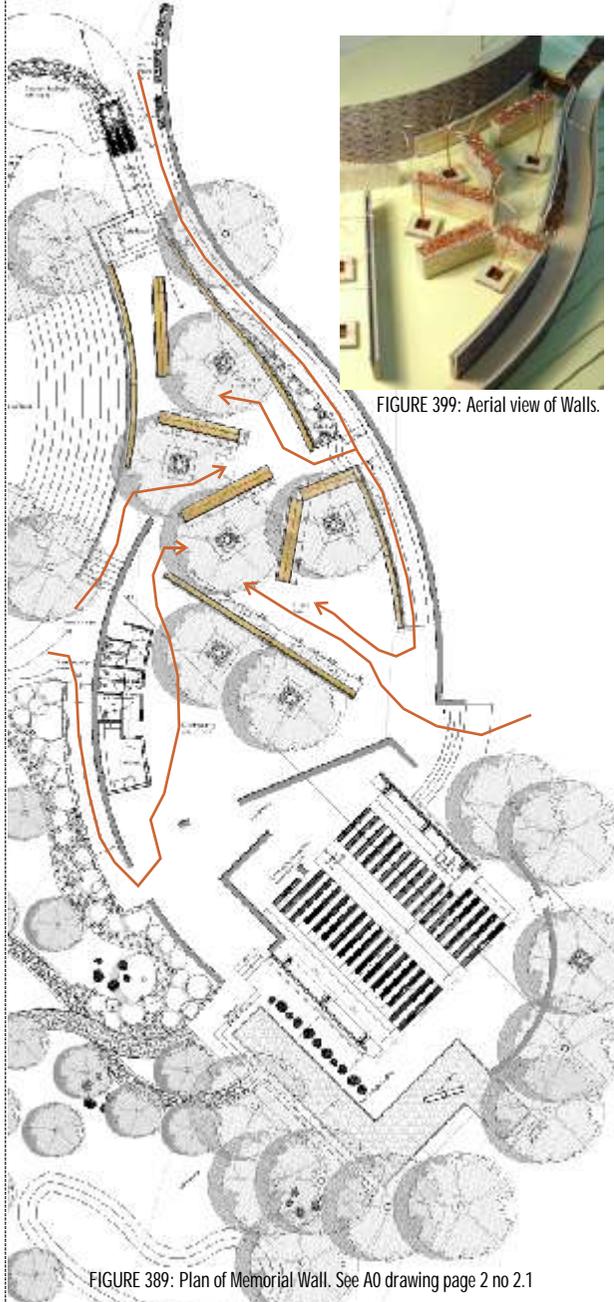


FIGURE 399: Aerial view of Walls.

FIGURE 389: Plan of Memorial Wall. See A0 drawing page 2 no 2.1

A Memorial Wall can serve as an income for a congregation. Church members or outside people can buy a niche or more than one for a family or couple. These niches are then kept empty until the assigned person passes away. The moment the box with ash is placed inside the wall, a period of 30 years starts before the box is removed. If the niche is reserved for a couple, the 30-year period will start as soon as both boxes are inside. Statistics show that 30 years is a reasonable time, thereafter people seldom visit the Memorial Wall. If no one claims the box after 30 years, the ash will go into a mass grave where the person's details are displayed. Or the contract can be renewed for another 30 years.

Memorial Walls are open to the public 24 hours a day and 7 days a week. Thus it is of immense importance to ensure safe visits and vandal proof construction. Because the boxes with ash remain for a considerable long time inside the wall, drainage of moisture is substantially important. Furthermore the user must be comfortable in finding the specific niche and reading the plate. The implementation of these aspects will be discussed in the design description.

The client has stipulated the need for a Memorial Wall in this project. The designer has decided to position the Memorial Wall close to the Chapel to facilitate easy circulation between a memorial service and the wall. The Wall area can be accessed from different positions, all employing the element of surprise. There is a choice between two ramps, suitable for wheelchairs, and two sets of staircases. When one is coming from the garden following the pathways to the Wall area, one descends with one meter to the level of the walls. This immediately creates a secluded pocket around the walls. People visiting the wall would prefer more privacy than that of the garden. By lowering the level, the feeling of privacy is increased. The walls are randomly placed to create smaller spaces in between, and with the walls being higher than even extremely tall people, outdoor 'rooms' are created. Thus, an individual can peacefully spend some time at the niche either standing or sitting while feeling concealed and secure. This is crucial to the success of the wall. People visiting the wall come with a definite purpose and have many grief-filled feelings to deal with. Their needs have to be tended to for them to make use of the healing time spent reminiscing.

There are few precedent studies on Memorial Walls in South Africa. The most frequently used design principle is to construct long horizontal strips of memorial plates. Persons visiting the wall want to leave something visible at the niche, something like a flower or small object. Usually the design doesn't allow for extras. In this design the designer has specifically designed for a flat surface inside the niche where a small pot with flowers can be placed. Because it is recessed into the wall, it will be partially sheltered from rain and direct sunlight. This will make the niche more personal for the people visiting the wall. The openings in the wall are spaced randomly to break with the monotonous horizontal lines. These openings are all in proportion to one another and the larger concrete blocks. The proportions deriving from the Golden rectangle system. These dimensions are again repeated in the Chapel structure.



390



391

FIGURES 390-391: Memorial Wall at Pretoria East Congregation.

# Memorial Wall

## The working of the Wall

The wall is constructed of custom designed precast concrete blocks, stacked on top of one another. These concrete blocks have openings cast into them. Into these openings smaller precast concrete boxes are placed. The concrete boxes slope downwards to ensure adequate drainage in the case of water penetration. The water will run down the plastered brick wall, situated between the two sides of concrete blocks.

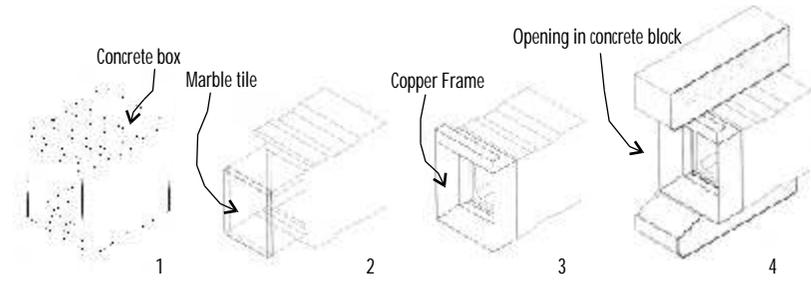


FIGURE 393: Construction of a Niche.

The precast concrete boxes are placed into the openings in the concrete blocks (4).

A custom designed copper frame is fixed to the concrete box with epoxy to prevent theft and vandalism (3). At the top of the copper frame is an opening for a light bulb. Every niche has its own internal light. This light will illuminate the inside of the niche and the name plate. This is necessary for proper orientation in the evenings. Someone visiting the Memorial Wall at night will then be greeted by a wall full of lit openings. These boxes of light would then also reflect in the water feature.

A marble tile is secured with screwed wire into the concrete box (2). After both boxes of ash have been placed inside, the tile will be fixed with epoxy and only opened after 30 years. This will ensure thorough security.

Most of the niches can contain two boxes with ash. The positioning of the openings in the concrete blocks have been determined by the Golden Spiral. The heights of these openings consider the sight lines of a person of average height. At the foot of the wall is a recess into the wall. This allows for someone to come real close to the wall without bumping one's toes.



FIGURE 392: Model of a section of the Wall.

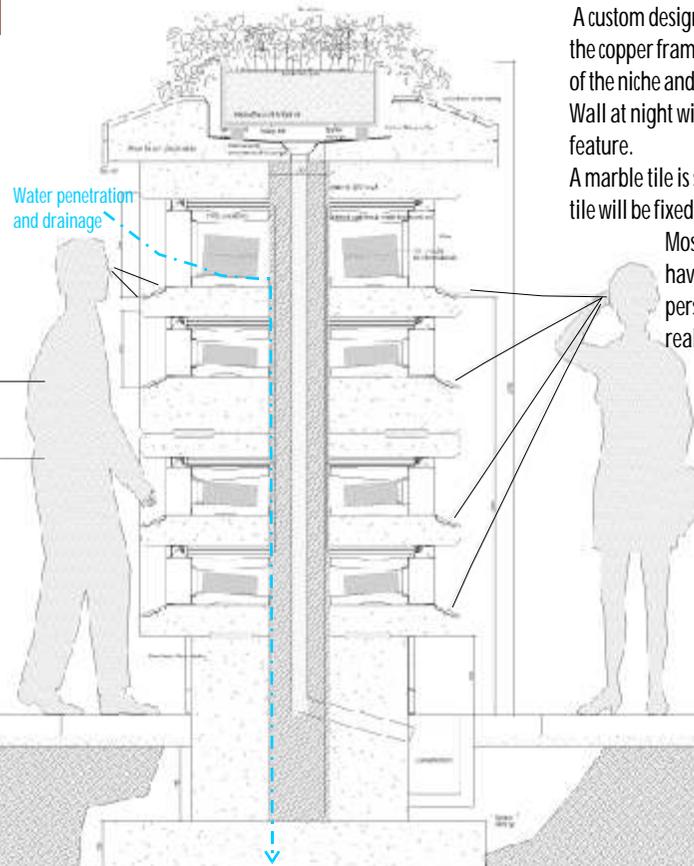


FIGURE 394: Section through the Wall. See Appendix drawing page 4 no 4.2

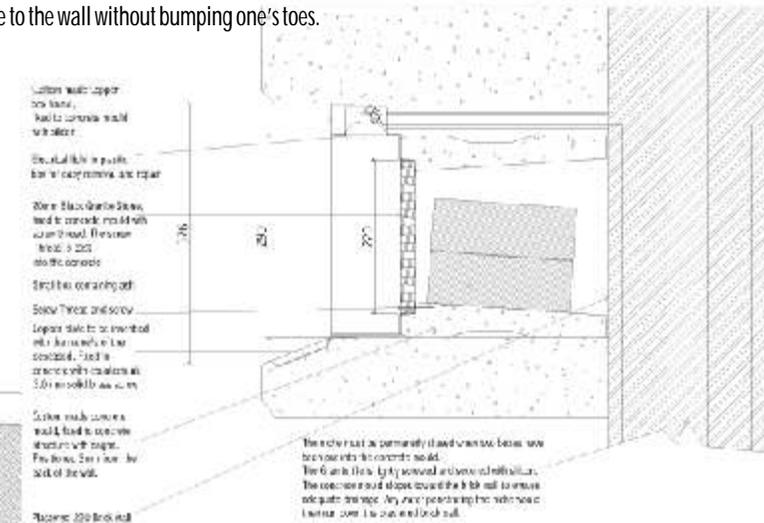


FIGURE 395: Detail Section through a Niche.

# Memorial Wall

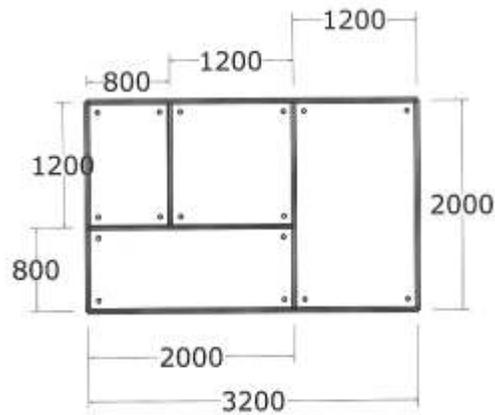


FIGURE 396: Drawing illustrating the modular concrete blocks.

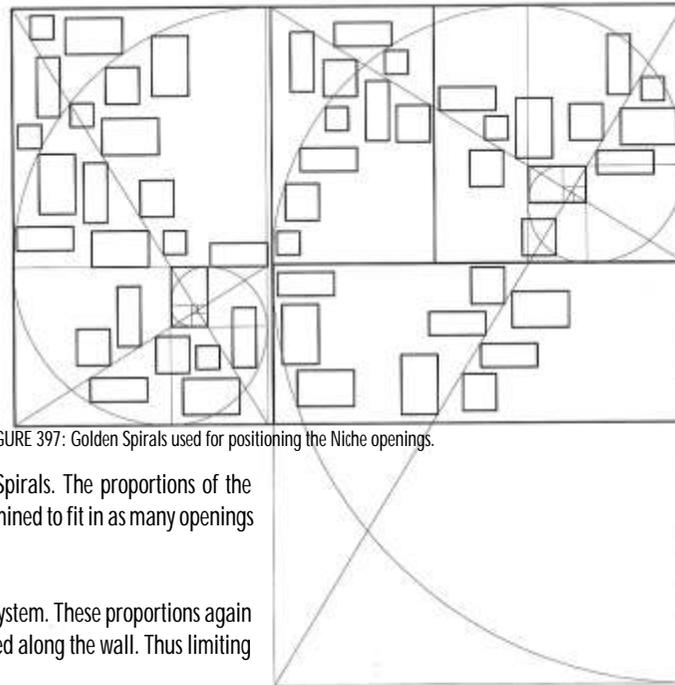


FIGURE 397: Golden Spirals used for positioning the Niche openings.

The positioning of the niche openings are conceptualized by using Golden Spirals. The proportions of the openings all correlate with one another. From here the final elevation is determined to fit in as many openings as possible.

The larger concrete blocks are also derived at by using the Golden Rectangle System. These proportions again correspond to that of the niche openings. A modular set of 4 blocks are repeated along the wall. Thus limiting the number of molds for the precast concrete blocks.

The appearance of the concrete faces are broken with the addition of slate cladding at the top and bottom part. The slate is found on the site and creates a slightly warmer atmosphere than only bare concrete. On top of the wall one finds numerous planters filled with Biblical flowers. These colourful flowers soften the top edge of the wall and adds to the intimate character of the wall's purpose. A sprinkler system in each planter waters the plants and is drained down the middle of the wall by means of a full bore system.



FIGURE 399: Model of Walls showing concrete blocks with niches.

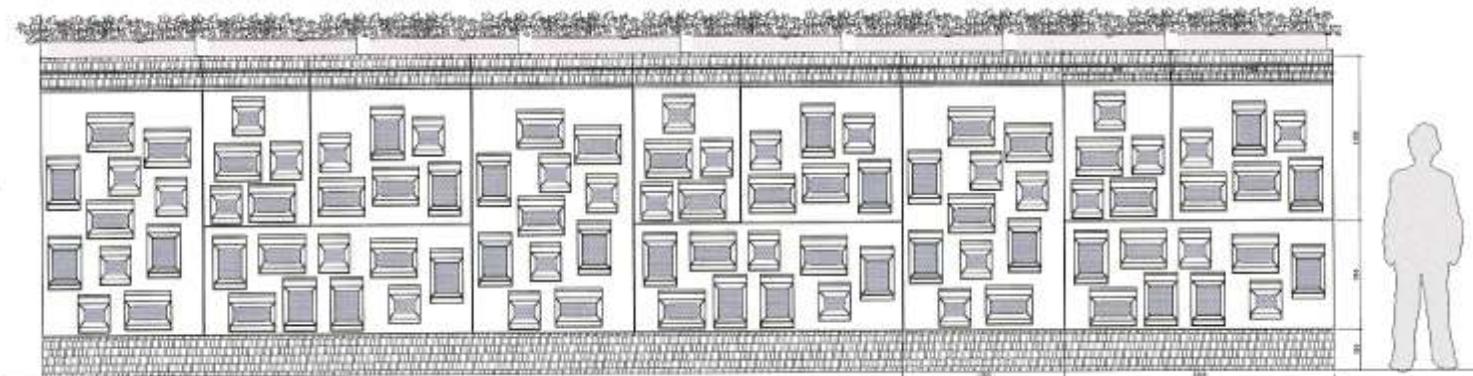


FIGURE 398: An elevation of the Memorial Wall.

# Memorial Wall



FIGURE 400: Eastern view of the Memorial Wall.

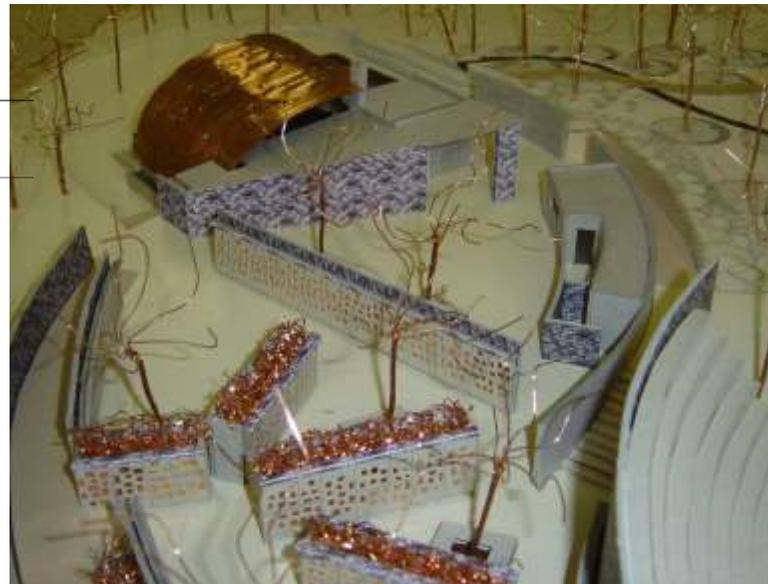


FIGURE 401: Southern view of the Memorial Wall.



FIGURE 402: Aerial view of the Memorial Wall from a south western angle.

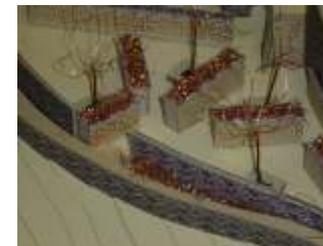


FIGURE 403: Ramp and walls.



FIGURE 404: Back of Amphitheater and wall.

# Memorial Wall



FIGURES 405-407: Photographs of a portion of the Memorial Wall.

# Chapel

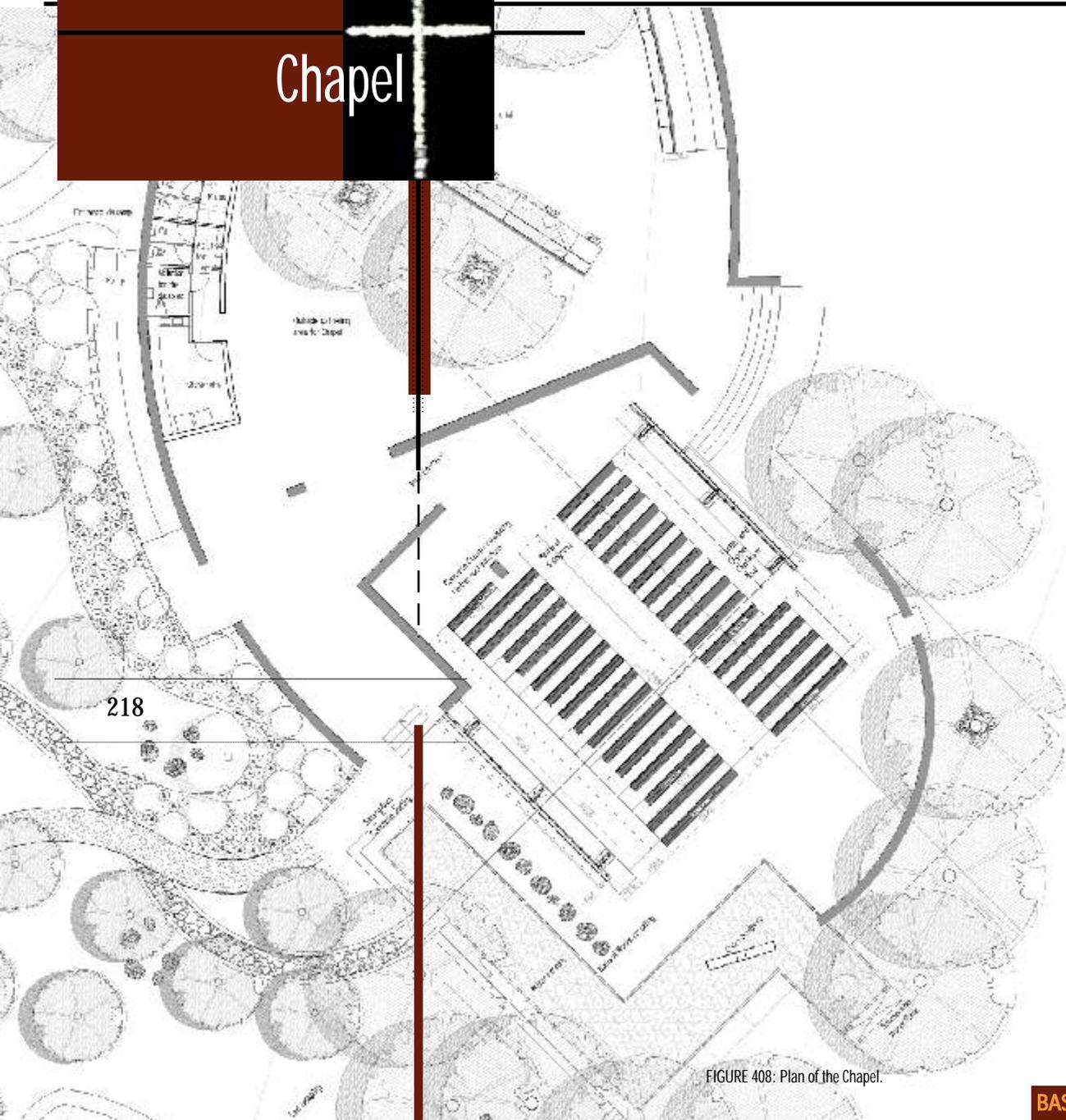


FIGURE 408: Plan of the Chapel.

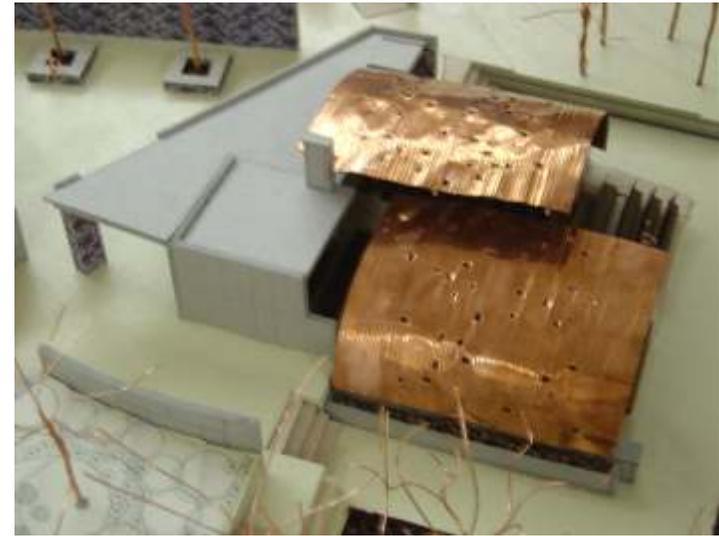
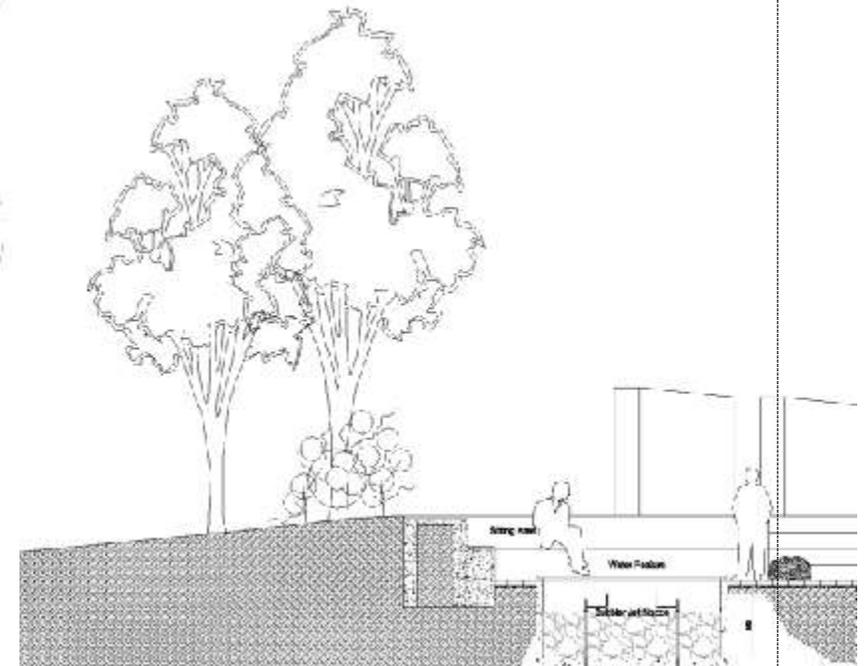


FIGURE 409: Aerial view of the Chapel.



BASELINE: Social - Environmental - Economic



# Chapel

One strolls along the meandering path leading through the garden and ending unexpectedly at the Chapel. One cannot as yet see what happens on the inside. The cantilever copper roof catches the eye and splendidly reflects the rays of the sun. One passes the bubbling water of the pond and stair into the sculpture of the cross. Many different feelings flood one's soul as one remembers the suffering and price the Savior had to pay, but at the same time, His love and service to others and one's own mandate to do the same. The curved wall at the front directs the movement and one turns to face the inside of the Chapel. The floor with timber benches slopes upwards to the back of the Chapel and main entrance. From here one can see another image of the cross. A cross has been cut out of one of the concrete blocks. Thus an imprint of light, God is our light. From the openings in the copper roof come beams of light down onto the darker interior, onto the seats. God is our light in darkness. The inside of the curving roofs are clad with rich timber ceiling planks. The timber is a symbol of Christ's true humanity and the immortality of one's soul.

While sitting down, one becomes aware of the many trees surrounding the Chapel and providing shade for the front part. The trees are a symbol of abundant life and healing. The leaves rustle in the wind and a bird, somewhere in the many branches, bursts into joyful song. The water bubbles in the background and peacefulness creeps across the green landscape and into one's soul. The combination of trees and walls form a protective space where one can meet with the Father. The curving roofs remind of loving arms embracing all hurt and insecurities. It is a calming experience and a blessed relief from the mad rush of life. One hears the whisper: "Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls. For my yoke is easy and my burden is light." Matthew 11:29 (NIV, 1985:1458) One lingers for yet another while, and then, renewed in strength, one walks back into the world, part of it, but not from it.

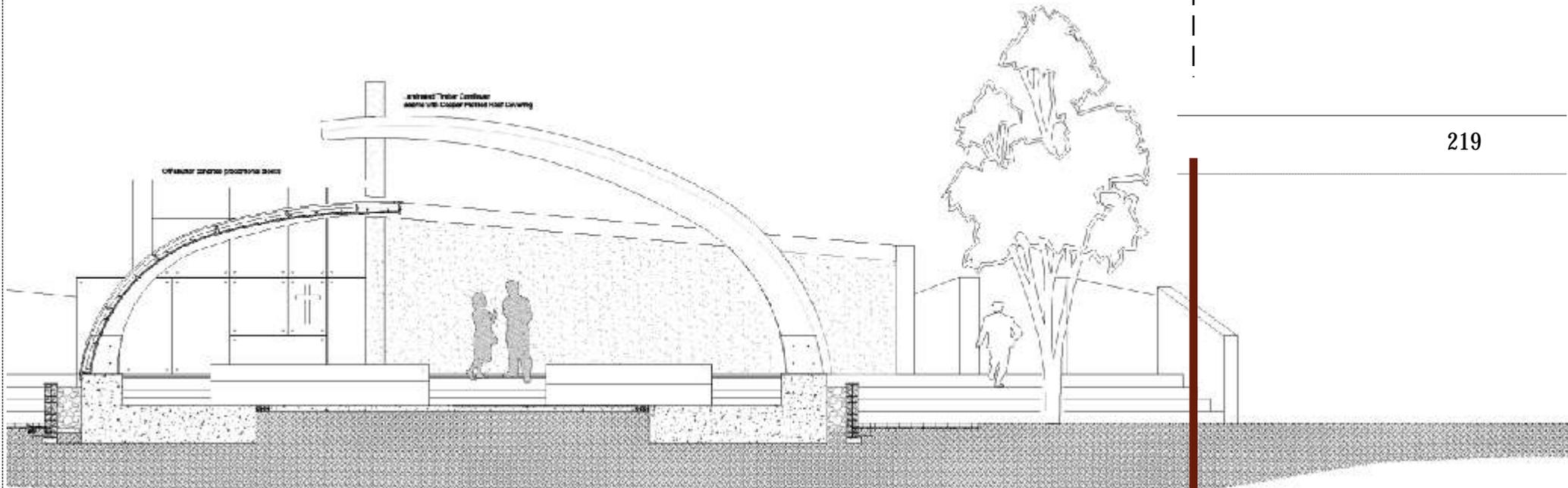


FIGURE 410: Section through the Chapel.

# Chapel

## Uses

The Chapel is a small and intimate building when compared to the thousand-seat-Auditorium. From the Delta information sessions at the congregation, Church members have stated the need for a small Chapel. This Chapel is mainly used for Weddings, Funerals, Memorial Services and then also any other activity in need of seats. It is then also an outstanding place to become quiet before the Lord. During the day when the Chapel is not in use, it becomes a haven for individuals and small groups to spend time with God, have a few moments of rest or simple converse on matters from the Word.

## Position in the Landscape

The entire site is 18ha making it a strenuous exercise to identify the most suitable area for positioning the Chapel. The primary criteria for choosing an area required the Chapel to be within reasonable walking distance from the Auditorium, but yet far enough to ensure privacy and quietness. The next logical step was to place the Chapel on the other side of the level area facing in the opposite direction than the Auditorium. The direction in which the Chapel faces is then also the best view across the landscape. The scene that unfolds is mainly still natural landscape. However, the surrounding landscape is subject to future residential development and will thus not remain untouched for very long. But for the time being the natural landscape is a bonus for the users of the Chapel.

## Interaction with the Memorial Wall

The Chapel and Memorial Wall are deliberately placed along side each other. The working of the Wall is closely related to the Chapel. A Funeral or Memorial Service will most probably make use of the Wall after the ceremony. A Funeral or Memorial Service are emotionally draining experiences and people should not have to walk very far. One must especially think of the elderly people. Therefore the memorial area and the Chapel is generously provided with ramps accessible to wheelchairs. The ramps inside the Chapel are suitable for wheelchair users and there is space for wheelchairs to park at the back of the Chapel, close to the main entrance. There are a few different routes one can follow between the Chapel and Wall. Thus giving the user the privilege of choice.



FIGURE 411: Chapel as an intimate space.



FIGURE 412: Aerial view of garden, Walls and Chapel.



FIGURE 413: Positioning of Walls and Chapel.

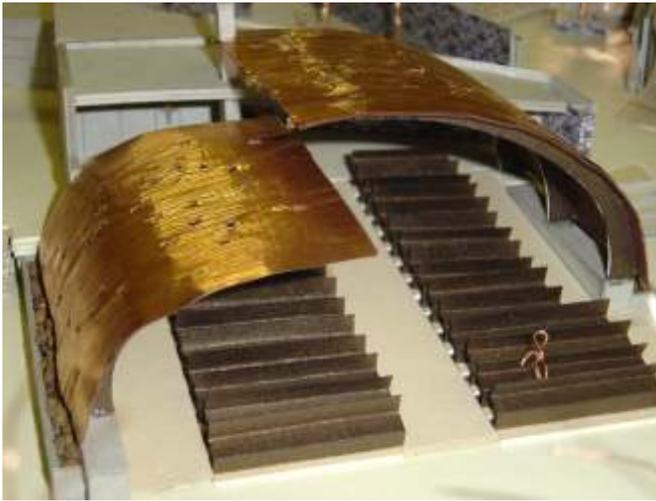


FIGURE 414: The interior is exposed to the exterior.



FIGURE 415: The front of the Chapel is exposed to direct sunlight.

#### The open-air principle

For some people it is a strange idea to have a Chapel that is open to the elements, and some parts exposed to the sun. The presence of natural light, wind and sometimes water, is part of the experience of this unique Chapel. South Africa has very favorable weather conditions and designers must make better use of it. It is true that believers experience God more intensely when out in a natural environment. This Chapel is definitely not creating a complete natural environment, but by incorporating some natural elements, it is hitting closer to the target than usual. When one is out in the open, the things that bring the most pleasure are a cool breeze of fresh air, rustling leaves, bubbling water and sound nearby of life like birds and insects. The design of the Chapel aims to incorporate all of these elements in the person's experience.

What if it rains, this is of course a possibility. The curving roofs are detailed such that rainwater will run down the slope and not over the edge of the roof. The water runs into the concrete containers filled with rocks. Water running over a copper roof is not suitable for plants, thus the water is directed into the storm water system instead of onto the landscape. If it rains in the same time slot as a scheduled wedding, the wedding will move to the Auditorium where the required space is defined with partitioning, thus creating a small Chapel inside the Auditorium.

The front part of the Chapel is exposed to direct sunlight. This is the area where the preacher, couple to be married or speaker will stand. The direct sunrays are controlled by big trees creating shade over this area in the mornings, and the roof structure throwing a shadow in the afternoons. Thus the persons in front will be surrounded by beautiful natural light without being in the direct sun. This provides favorable conditions for professional photography.

# Chapel

## Use of light and dark

To successfully implement the use of light, darkness is required. It is a logical deduction that intense light in an outside structure will only be visible against a dark fore- or background. The front and lowest part of the Chapel is the most exposed to natural light, while the back and main entrance is mostly closed on all sides and thus quite dark. This contrast between light and dark bears meaning in that God is our light when we find ourselves in darkness. He is the one to give relief and insight.

The ramp leading down to the Chapel almost leads directly into the main entrance of the Chapel. The first thing one sees when turning from the ramp is the wall at the end of the corridor leading into the Chapel. This stonewall has over it a wash of light from a slit in the concrete roof. This is to remind the visitor that there is always light, always hope. The light focuses the attention on this wall and makes it an ideal spot to place an artwork, done by one of the congregation members. It also directs the user to another entrance. When it rains the water, collected on the sloping concrete roof, will flow down the slit and into a grid underneath in the concrete floor.

When standing at the front and looking to the Chapel, one sees the cross of light. This is an image of the cross cut from one of the precast concrete blocks. The image is bright against the darkness on the inside. It gives the same effect when looking at it from the outside gathering area, in front of the kitchenette. The cross is a distinctive characteristic of a place of Christian activities. This cross will direct new users to the purpose of the building.



FIGURE 416: Contrast of light and dark.



FIGURE 417: Ramp leading to the main entrance of the Chapel.

The curving cantilever roofs also play a part in the use of light. The roofs comprise a timber structure clad with profiled copper sheeting on the outside and ceiling planks on the inside. Within this composite structure are numerous openings. The proportions of the openings correspond with the openings in the Memorial Walls. Copper boxes are positioned in the openings and thick glass stuck to the outer end of the boxes, thus creating tunnels of light penetrating the roof. These numerous openings will create many spots of light inside the Chapel. When sitting underneath and looking upwards, one sees a roof of lights, resembling a night sky with stars. Within each hole an individual light is placed, creating a roof with lights all over it at night. This will have a stunning effect for someone walking through the garden to the Chapel at night. One sees the Chapel slightly from above before descending to the bottom level of the Chapel.



FIGURE 418: Viewing the Chapel roof from the top.



FIGURE 419: Pockets of light streaming into the Chapel through the small openings in the roof.

# Chapel

## Use of materials

The Chapel consists of a number of materials. The custom designed concrete blocks correspond with the concrete blocks found in the Memorial Wall. These blocks are exactly the same except that the blocks in the Chapel don't have openings in them. These blocks are modular units and fit onto each other in a number of different compositions. The shadow lines of the different blocks break the smoothness of the concrete surface and create some texture. The stonewalls contrast against the precast concrete blocks. This creates diversity of colour and texture. The stone is warmer and more humane than the clean concrete blocks. The combination of the two creates a pleasing balance. On the inside one is overwhelmed with a rich timber cladding in the curving roofs. The timber brings about warmth and intimacy. The benches are also a dark, smooth timber and stand out against the concrete floor. At the bottom end of the copper roofs are concrete holders with natural rocks. These rocks remind one of God as the rock upon which one should build. The material finishes have relatively low maintenance. It will be necessary to regularly clean the timber benches.

## The water feature

Part of the Chapel configuration is a water pond filled with natural stone. This water feature runs along the side of the Chapel and bends 90 degrees to form part of the front area also. The section of the pond at the side of the Chapel is secluded from the activities inside. Seating area in the form of built-in concrete seats and large natural rocks surrounds it. This is once again a splendid space for contemplation or small group interaction. It is a calming and relaxing experience sitting close to bubbling and moving water. The water feature is open for touch and someone can indulge in putting his or her hand or feet into the cold water. Sitting at the water feature, one looks across the green landscape and is aware of the luscious vegetation around the Chapel. The moving water is once again a reminder of God's blessings and the companionship of the Holy Spirit.



FIGURE 420: Different materials are used in the Chapel construction.

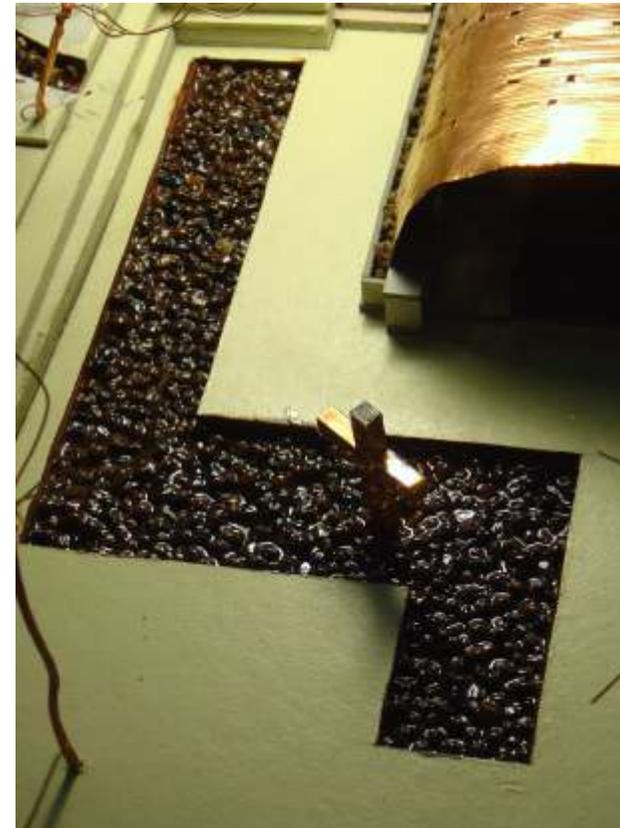


FIGURE 421: Water feature next to the Chapel.

#### Connection with the landscape

Space flows in and out of the Chapel and its surrounding areas. It flows across the water feature and in between the trees. It moves over the walls and downwards into the garden. It drifts from the main entrance and passes the front of the Chapel. A person sitting or walking around the Chapel will constantly be aware that indoor and outdoor space virtually becomes one. One can enjoy many different views from the Chapel across the gardens, connecting the Chapel with the surrounding elements. The branches of the surrounding trees lean over the edges and walls, full of benevolence reaching into the man-made space. Although most of the surfaces inside the Chapel area are hard and impermeable, the soft edges of the landscape delude the focus.

#### Outside gathering area

Next to the Chapel one finds an outside gathering area with a kitchenette and ablation facility. The kitchenette is ideal to serve refreshments and eatables after a Funeral or Memorial Service. After the service in the Chapel, the people circulate to the gathering area and enjoy refreshments. From the gathering area it is easy for people to move to the Memorial Wall if need be. The ablation facilities are open all the time. People in the garden and at the Wall can also make use of it.

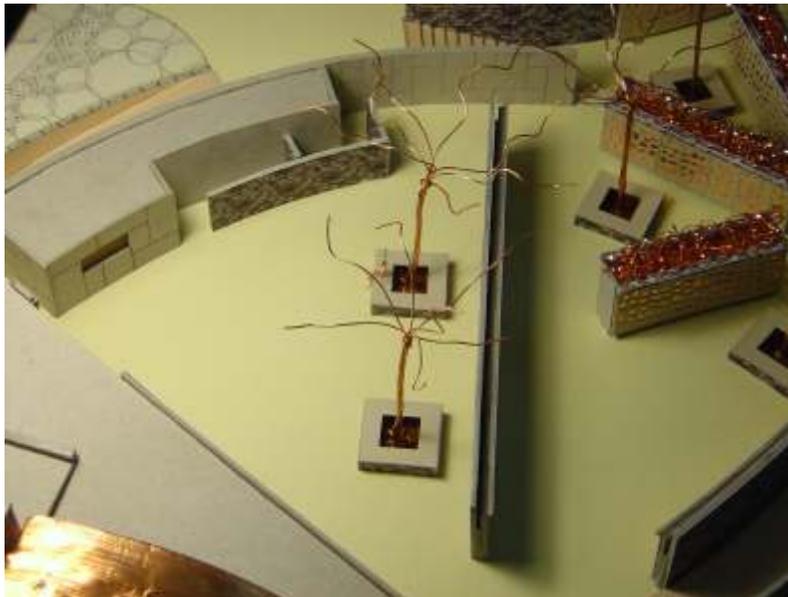


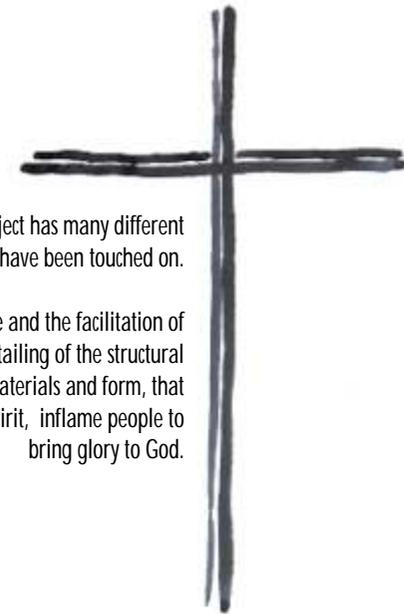
FIGURE 422: Outside gathering area next to the Chapel.

# Conclusion

226

Designing for a Church is an extensive project. This project has many different facets and only a few have been touched on.

In conclusion, one can see that the experience of space and the facilitation of religious activities are the most important issues. The detailing of the structural elements must stir the senses. It will be in the use of materials and form, that spaces are created that will, through the work of the Holy Spirit, inflame people to bring glory to God.



Alexander D&P. 1977. Handboek by die Bybel. Kaapstad: Verenigde Protestantse Uitgewers.

Alexander P. 1980. Bybelse Ensiklopedie vir die Jeug. Kaapstad: Verenigde Protestantse Uitgewers.

Ando T. 12. GA Architect. 12 Vbl 12.

Ando, T. 1989. Church with the Light. Japan Architect, Nov/Dec 1989, p25-33.

Architectural Design. 2002. Furniture and Architecture. Volume 72. No 4. July 2002.

ARQ Specialist Engineers. 2000. Geotechnical Investigation Report for Atterbury Properties, 1292/4711. Pretoria: 66 Ingersol Road

Barker K. 1985. The New International Version Study Bible (NIV). U.S.A: Zondervan Bible Publishers.

Barnard AC. Grondbeginsels vir Gereformeerde Kerkbou. Univeriteit van Pretoria.

Barr, DL. 1987. New Testament Story: An introduction. Belmont: Wadsworth.

Bartie D. 2003. Interview. Moreletapark NG Church, 14 January 2003.

Batchelor, M. 1993. Opening up the Bible, the ideal introduction to the world's best selling book. England: Lion Publishing plc.

Bronswijk, A.C. 1987. Symbolen, de taal van kunst en liturgie. Gravenhage: Uitgeverij Boekencentrum B.V.

Bruggink & Droppers. 1965. The great Ages of Architecture. London: Oldbourne Press.

Burden J & Ferdinand D. 1986. Kom ons doen Bybelstudie. Acacia: Via Afrika Beperk.

Chapel on Stage. 2002. Architectural Review, December 2002, vol.212, issue 1270, p78,79.

Ching F.D.K. 1996. Architecture. Form, Space and Order. Second Edition. USA: International Thomson Publishing Inc.

Christ-Janer A & Foley M.M. 1962. Modern Church Architecture. Florence: Fratelli Stianti.

Cohn, D. 2000. Rafael Moneo's. . .Centro Kursaal. Architectural Record, May 2000, p212-223.

Concrete Manufacturers Manual. 1994. Concrete Masonry Units. Fourth Edition 1994. P1.4

Church of the Light. 1999. JA Yearbook 1999, p40-43.

Church on the Water. 1991. Japan Architect, January 1991, p110 121.

Covey, S.R. 1994. The Seven Habits of Highly Effective People. Powerful Lessons in Personal Change. Great Britain: Butler and Tanner Ltd.

Curl J.S. 1991. The Art and Architecture of Freemasonry. London: B.T. Batsford Ltd.

Davidson C. 2001. Michael Graves. ARCHITECTURE. May 2001, p126-131.

Doczi G. 1981. The Power of Limits. Proportional Harmonies in Nature, Art and Architecture. Massachusetts: Shambhala Publications Inc.

ds Nicol W. 2003. Sermon on the Universe and God. Pretoria: Universiteitsoord NG Church. 23 February 2003.

Fleming W. 1995. Arts and Ideas. Ninth Edition. USA: Ted Buchholz

Hay R & Synge PM. 1991. Colour Dictionary of Garden Plants. London: Bloomsbury Books.

Gibberd, J. 2002. Lectures on Sustainable Design in Architecture. University of Pretoria: Boukunde.

Grinaker Masonry. 1984. Structura Modular Textured Masonry, Product Catalogue. July 1984

Grinaker precast. 1992. Paving designs.

Keizer R. 2003. Philosophy of the Arts discussion. Pretoria: Universiteitsoord. 6 March 2003.

Kiene PF. 1977. The Tabernacle of God in the Wilderness of Sinai. U.S.A: Library of Congress Cataloging in Publication data. p28

Koorts J.M.J. 1974. Beginsels van Gereformeerde Kerkbou. Cape: Nasionale Boekdrukkery Beperk.

Louw, L. 2003. Interview. Pretoria: Hatfield. 12 March 2003

Marchiano, B. 2000. Gister, Vandag en vir Ewig. . . Jesus. Vereeniging: Christelike Uitgewersmaatskappy.

Mathews, PJ. 2003. Architecture. Pretoria: Visual Books

Meier, R. 1999. Church for the Year 2000, Rome. Architectural Design. Vol.68 n.11-12.

Memorial Bridge. 2002. Architectural Review, December 2002, vol.212, issue 1270, p46,47.

Moreletapark NG Church. 2002a. Omgeegroepbybelstudie. Pretoria: Moreletapark.

Moreletapark NG Church. 2002b. Research on new Congregational Facilities. Pretoria: Moreletapark. p13

Napier, A. 2000. Enviro-friendly Methods in Small Building Design for South Africa. Published by the Author. p 4.5.1

Nel, P. 2002. JHB Solar Academy. Johannesburg September 2002.

Purdy. M. 1991. Churches and Chapels. Design and development guide. Oxford: Butterworth Heinemann Ltd

Rabie D. 2002. Information on new extension phase for Moreletapark. Information document. Pretoria: Moreletapark NG Church.

Rabie D. 2003a. Report on the Delta Information sessions. Pretoria: Moreletapark NG Church.

Rabie D. 2003b. Interview Moreletapark NG Church, 16 January 2003.

Rabie D. 2003c. Delta Infosessie, Slide Show production. Moreletapark NG Church. 5 February 2003.

Renier. 2003. Interview Pretoria: Woodlands. 5 March 2003.

Reynolds, J.S. 2002. Effective Passive Design. History and Overview. USA: University of Oregon.

Russel, J.S. 2000. Crematorium. Architectural Record, May 2000, p224-231.

Ryan, R. 2000. Topographic Translucence. Architectural Review, May 2000, p44-49.

SABS 0400. 1990. Pretoria: SA Buro for Standards.

Senekal, K. 1999. Durban Christian Center. Architect and Builder, November 1999, p18-21.

Sheat WG. 1982. The A TO Z of Gardening in South Africa. Cape Town: Struik Publishers.

Solomon M.J. 2002. The Ecclesiastical Utensils Of The Anglican Church: Their Significance, History And Manufacture. Technicon Pretoria: Theoretical Assignment

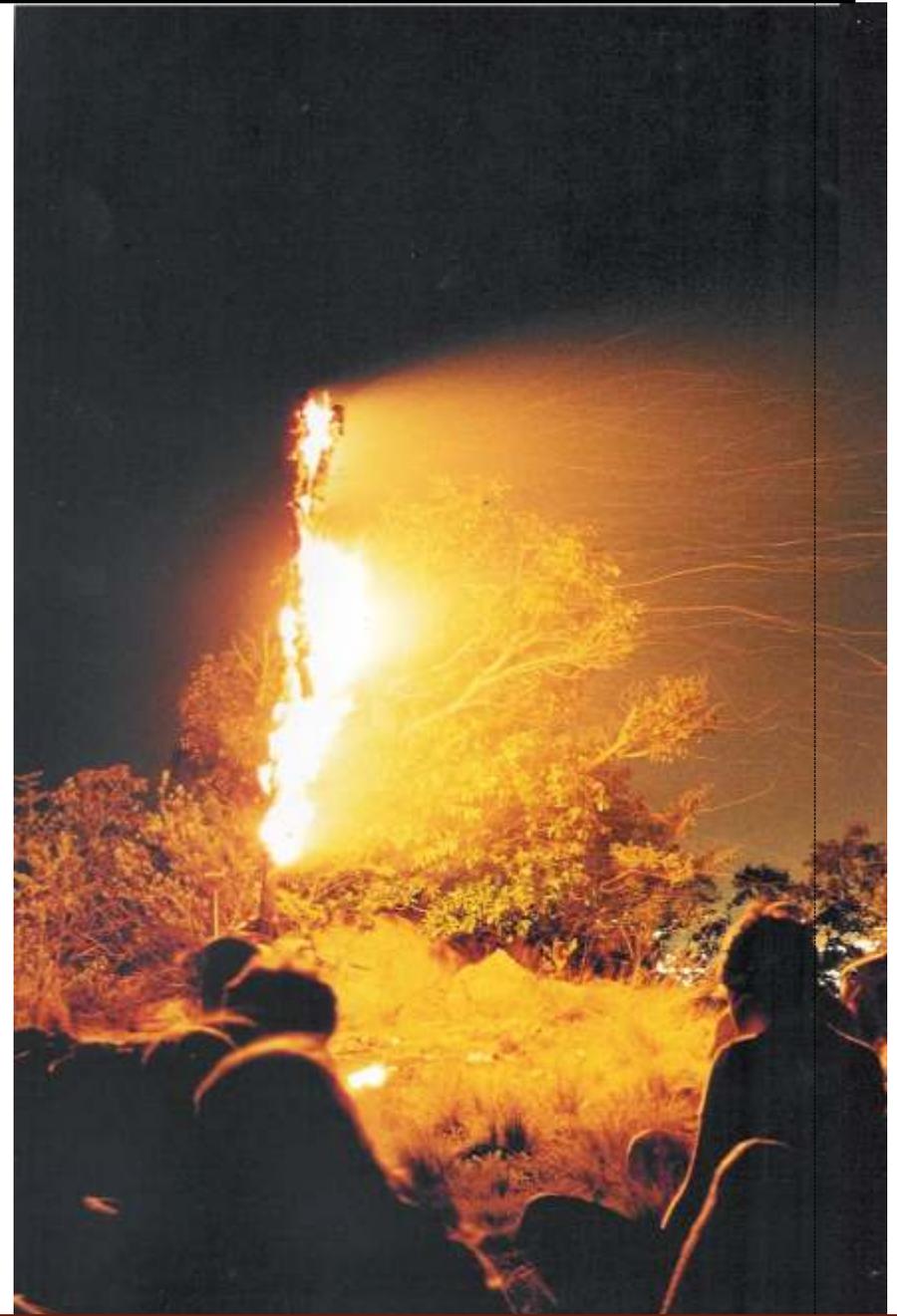
Steyn GM. Symphony in Stone. Pretoria: Hoofstadpers Beperk.

- Steyn JL. 2003a. Christianity and the Christian Church. White river
- Steyn JL. 2003c. Art and the Church. White River.
- Steyn M. 2000. Landscape Photography. April 2000. Kruger National Park.
- Steyn M. 2001. Photography on a Christian Camp. January 2001. Rustenburg.
- Steyn. M. 2003b. Photographs taken of site and surrounding area of Pretoria East. 27 February 2003.
- Steyn, M. 2003d. Photographs of structural models. 3rd June 2003.
- Swanepoel K. 2003. Interview. Pretoria: 206 Tucker Street. 5 March 2003.
- Tenney M.C. 1980. The Zondervan Pictorial Encyclopedia of the Bible. Michigan: Zondervan Publishing House.
- The Grinaker Service. Pavement design.
- The Larger Touring Atlas of SA. 2001. Sunbird Publishing.
- Tswane Council. 2003. Pretoria maps and aerial photographs. Pretoria: Munitoria
- Tutt P & Adler D. 1998. New Metric Handbook, Planning and Design Data. Great Britain: MPG Books Ltd.
- Universiteitsoord Dutch Reformed Church. 1985. Die Koord. Pretoria: Ye Olde Print Shoppe.
- Van der Spuy D. 2003. Interview Moreletapark NG Church. 13 February 2003.
- Van der Spuy U. 1986. Struik vir die Tuin. Kaapstad: Don Nelson.
- Venter. L. 2003. Zoning map. Pretoria: Munitoria
- Visi magazine. 2001. Argitekshuise. Somer 2001.
- Vosloo W & Jv Rensburg F. 1993. Die bybel in praktyk. South Africa: Christelike Uitegwersmaatskappy.
- Vosloo W & Jv Rensburg F. 1999. Die Bybellenium Eenvolumekommentaar. Vereeniging: Christelike Uitgewersmaatskappy.
- Webb M. 2002. Our Lady of the Freeways. Domus, November 2002, p34-51.
- Weston R. 1997. Alvar Alto. London: Phaidon Press Limited.

# Thanks!

Glory to Him who is  
a b l e t o d o  
immeasurably more  
than all we ask or  
imagine, according  
to His power that is  
at work within us."

Ephesians 3:20 (NIV, 1998:1794)



# Thanks!

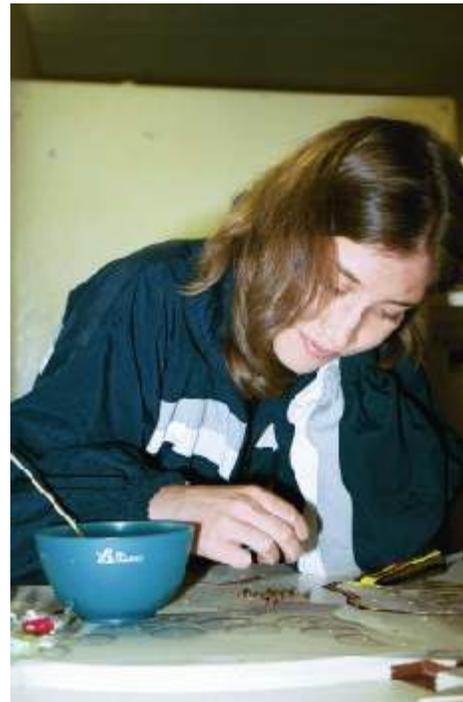
Thank you to all the following people for your love, support, prayers and help:

- GOD — For providing enough light and grace for each step
- Father Anton Steyn — For your constant support, prayers and encouragement. You have been an inspiration!
- Mother Marlene Steyn — You have added a tremendous amount of energy to my life! Thank you for your love and support.
- brother Francois Steyn — For all your hard work editing this document.
- boyfriend Ebbie Hattingh — For your belief in me and all your prayers.
- Grandfather Johannes Steyn — For always being interested and all your prayers.
- Grandmother Marguerite Steyn — For helping with the theology.
- Grandmother Dorothy Zietsman — For being patient and allowing me to do my own thing.
- Ds Tienie Bosman — For always being very helpful and friendly.
- Prof Roger Fisher — For helping with information on Moreleta.
- Karlien — For believing in the work of a student.
- Diana Rabie — For allowing me to use Moreleta as the client.
- Ds Dirkie vd Spuy — For patiently helping me with the details. You have been a wonderful inspiration!
- Derek Bartie — You'll never know how much you meant to me. You have a lot of influence in the lives of all who cross your path. Keep up with the Kingdom work!
- Edwin Anderson —
- Lana Patterson —
- Friends:
- Henrike Fischer — For sacrificing your precious time and helping me with the model. Your are very dear to me.
- Tharina de Wet — For your support and friendship.
- Deidre Pietersen — For all your studio visits and encouragement.
- Coralie Tait — For your prayers and care.
- Anel Eksteen — For your constant belief and strong faith.
- Louise Hunk — For all your visits and support.
- Sonja Brits — For helping with the model on a Sunday afternoon!
- Flubber Groenewald — For all your time to buy the electrical lights.
- Diederick Meij — For sacrificing rugby world cup to help build the model.
- Jaco en Mariette — For all your time spent in the studio building the model.
- Nicola Kortenhoeven — For all your letters left on my chair in the studio. May God bless your creativity for His purposes.

# The Model



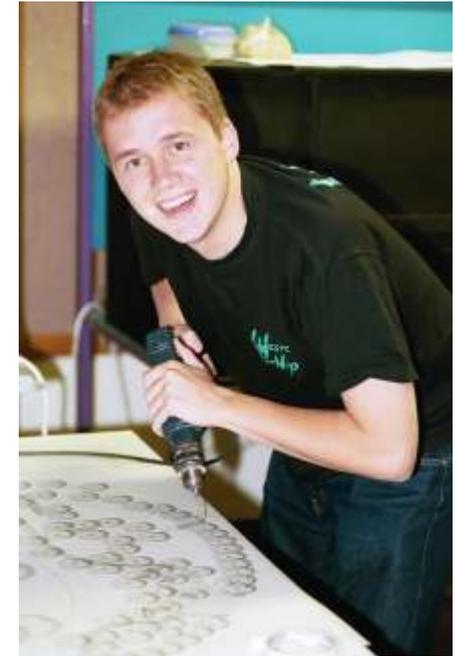
Henrike



Henrike



Sonja



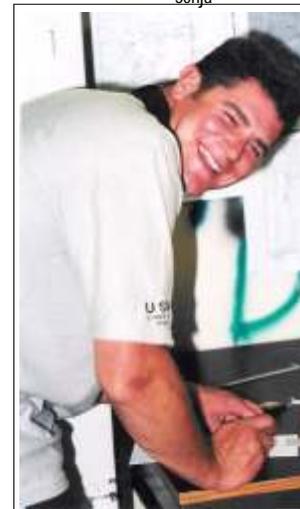
Diederick

232

Thank You so much to all the people that has diligently helped me for many toiling hours.



Jaco en Vloot



Ebbie



Mariette

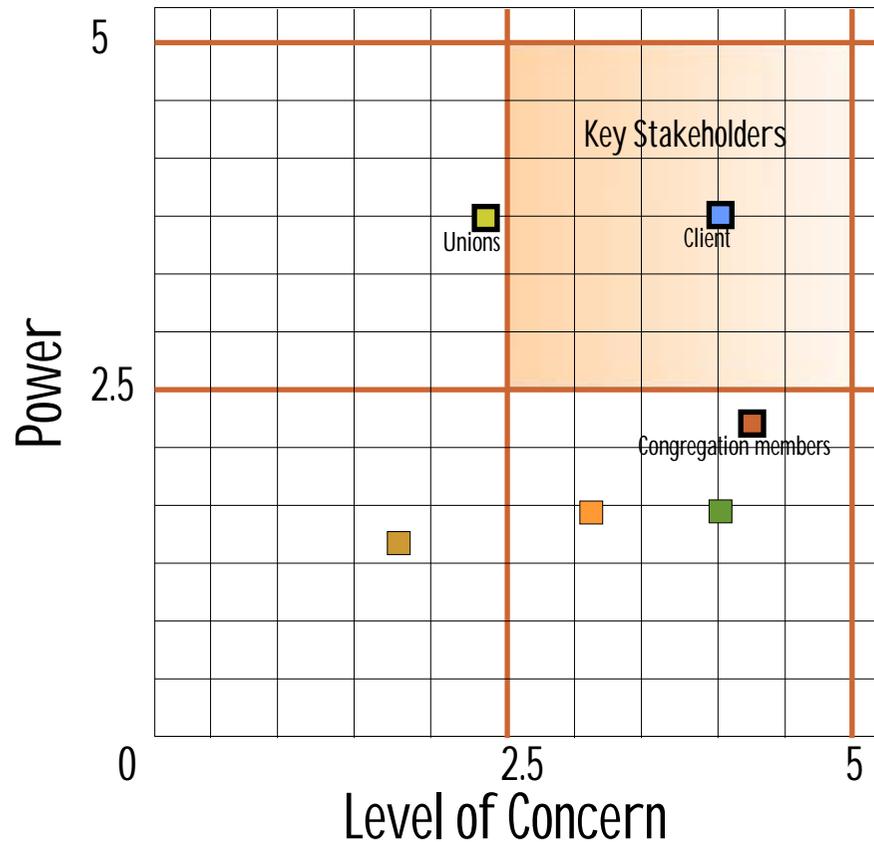
# Cost Analysis

	<u>Material description</u>	<u>Quantity</u>	<u>R/mxm</u>	<u>R/m</u>	<u>R/item</u>	<u>Amount</u>	<u>Total</u>
Chapel	Custom designed precast concrete blocks	46mxm	250			11 500	
	Profiled Copper roof covering	226mxm	1 500			339 000	
	Timber Roof Structure	226mxm	100			22 600	
	Timber Chapel benches	131m		700		91 700	
	Concrete roof slab	115mxm	380			43 700	
	Concrete floor with screed	190mxm	80			15 200	
	Slate wall cladding	45mxm	100			4 500	535 400 + 10%
	230 brick wall	45mxm	160			7 200	<u>R588 940</u>
Memorial Walls	Custom designed precast concrete blocks with openings	268mxm	500			134 200	
	Custom designed copper frames	1202			800	961 600	
	Slate wall cladding	46mxm	250			270 000	
	230 plastered brick wall	200mxm	160			32 000	
	Black marble tiles	292mxm	200			58 472	
	Concrete paving blocks	790mxm	100			79 000	1 564 522 + 10%
	Custom designed precast concrete blocks	117mxm	250			29 250	<u>R1 720 974</u>
						R2 309 914	



low 1 - 5 high

Stakeholders	Power		Level of Concern			
	Influence on others	Direct labor control	Y- axis	Technical	Social	X-ais
	0.3	0.7		0.3	0.7	
Client (Building Commission)	4	5	4.7	5	4	4.3
Congregation members	3	2	2.3	3	5	4.4
Neighbors	4	1	1.9	1	4	3.1
Environment	3	1	1.6	1	2	1.7
Unions	1	5	3.8	1	3	2.4
City Council	4	1	1.9	1	4	3.1



The most important stakeholders have been identified and sorted according to their power and level of concern. From the resulting graph the Key Stakeholders can be identified. It is clear that the client is the most important stakeholder with the most power and greatest level of concern. The next two stakeholders of importance are the Unions and the Congregation members. The graph illustrates that the Unions can be a possible risk if the laborers are not treated legally and fairly. This is valuable information and the project manager can pay attention to the requirements of the union. The graph indicates that the congregation members have a relatively high influence and should be respected where involved in the project.

The City Council and neighbors are not stakeholders with immense influence but should still be considered in decision making and the development. The environment is the stakeholder that receives lowest priority. This is reflected in the direction of focus in the project. Social issues are much more important than environmental concerns.

# Risks

## Identifying Possible Risks:

### Stakeholders as risks:

- Unions
- Neighbors

### Typical internal risks

- Proper cost analysis
- Communication between church and building commission
- Management of the Wall after completion

### Typical unpredictable external risks

- Natural hazards :Storms danger to Chapel roof structure
- Deliberate intent: Vandalism of the wall
- Failure of Completion: financial support

### Typical predictable external but uncertain risks

- Availability of raw material

### Table Key:

#### Consequence

Catastrophic	5
Major	4
Moderate	3
Minor	2
Insignificant	1

#### Likelihood

Likely	5
Moderate	4
Unlikely	3
Rare	2

236

#### Risk Result

High  
Medium  
Low

Risk Description	Consequence	Likelihood	Risk factor	Risk Result	Mitigation measure
Trade Unions	3 Moderate	3 Unlikely	9	Medium	The building commission must be fully aware of all Labor Legislation and should always comply. The laborers must be treated fairly and just. Ensure good communication with Unions.
Neighbors	3 Moderate	3 Unlikely	9	Medium	The congregation must maintain good relations with the neighbors. The activities at the church should not disturb the peace. They should have prior notice of major happenings.
Proper cost analysis	4 Major	4 Moderate	16	High	All custom designed elements must be carefully analyzed for a proper cost analysis. Specialists must be employed for accurate estimates.
Communication between church and building commission	4 Major	5 Likely	20	High	In such a large project with so many people involved, good communication is indispensable. Regular meetings and updates must be held to ensure good communication.
Management of the Wall after completion	3 Moderate	3 Unlikely	9	Medium	The letting of niches must be managed effectively in order to generate an income for the church. Responsibilities must be appointed to individuals.

# Risks

Risk Description	Consequence	Likelihood	Risk factor	Risk Result	Mitigation measure
Natural hazards : Storms danger to Chapel roof structure	4 Major	3 Unlikely	12	Medium	The copper roof is the most expensive element in the Chapel and will be a great expense to replace or repair in case of a hazardous storm. The cantilever roof is in danger of collapse when under enormous wind loads. Proper engineering details and specifications are essential.
Deliberate intent: Vandalism of the wall	4 Major	3 Unlikely	12	Medium	The Memorial Walls are open to the public 24 hours a day and therefore in danger of vandalism. Material finishes must prevent vandalism.
Failure of Completion: financial support	4 Major	3 Unlikely	12	Medium	Funds are generated from members of the congregation in the form of pledges and donations. Proper management of these pledges and donations is essential to collect the needed amount.
Availability of raw material	3 Moderate	2 Rare	6	Low	A large quantity of copper is required for the Chapel and Walls. Good management of resources is essential to reach completion within the planned time.

Consequence	Likelihood					
		5. Likely	4. Moderate	3. Unlikely	2. Rare	
5. Catastrophic		25	20	15	10	<div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: #c85130; margin-right: 5px;"></div> High Risk                 </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: #e6c07d; margin-right: 5px;"></div> Medium Risk                 </div> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #996633; margin-right: 5px;"></div> Low Risk                 </div> </div>