

# Mt. San Antonio College

## SABBATICAL LEAVE REPORT



ShangHai, China – March 2007

By **PROF. ROBERT I. HO, Architecture & Engineering Design Technology**



Above are examples of digital photos taken and/or world architecture visited during sabbatical.

# **Mt. San Antonio College**

## **SABBATICAL LEAVE REPORT**

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  - Arch 28 Portfolio of Jose Gomez -5 pages of Illustrations of “Revit” building from Arch 18. (Student animation video using Revit and 3DS-Viz is included in the attached VCD noted below) +5 p.)
  - Arch 28 Portfolio of Max Lang – 5 pages of Illustration of another “Revit” building. (Student animation video using 3DS Viz 2008 is included in the attached VCD noted below) +4 p.)
  - Arch 21 Portfolio of Jean Pierre Cuba – 4 pages of Illustrations of Architectural Design Project 1 and 2 (using Revit-Architecture 2008 and 3DS-Viz 2008 and 3DS-Max).
- F. Selected Photos from Internet article “10 Wonders of the New China” 122+ (1-7 p.)
- G. Revit Interoperability with CAD (example of internet resources) 130+ (1-20 p.)
- H. Skywards (World’s Tallest Buildings and 2008 Beijing Olympics) – Example of resources through internet research. 160+ (1-12 p.)
- 9 DVD DISK AND ANACHROME GLASSES (FOR STEREO VIEWING) - ENCLOSED

#### List of Main Folders/Files on DVD-attached:

- Word Files Used in the Final Printed Report (File Folder)
- Examples of Revit Lecture-Demo-Videos (Media files)
- Examples of Resources Collected (Misc. Files)
- Examples of other Demo-Videos (Media files)
- Examples of Blackboard Course Content Zip-files
- Examples of Architectural Photos (1300+ picture files)
- Appendix B – Supplemental Powerpoint (Folder with files)
- Appendix E – File Folder with Title Page and Student Portfolios
- Appendix H - Folder with Title Page and Skywards PPT (Powerpoint)

## STATEMENT OF PURPOSE

### Title/Abstract and Purpose of Sabbatical Leave: <sup>1</sup>

RESEARCH AND SELF-STUDY of “Revit”/BIM (Building information Modeler) and other digital multi-media resources to enhance/update the Architectural Technology Curriculum at Mt. San Antonio College.

(2 semester sabbatical leave during Fall 2006 and Spring 2007 with the use of 20 % previously banked leave time).



Above are examples of digital photos taken and/or world architecture visited during sabbatical.

<sup>1</sup> For a copy of the original Sabbatical Leave Application Proposal as approved by the Sabbatical Leaves Committee, please see Appendix A - “Application for Sabbatical Leave (for Fall 2006 - Spring 2007)”

# SUMMARY OF PLANNED AND ACTUAL ACTIVITIES

## Three Parts of the Planned Activities:

1. Research and self-study of Revit / BIM (Building information Modeler)
2. Research and self-study of other digital multi-media resources - min. 2 new software out of 5 names below:
  - Adobe “Photoshop”
  - Adobe “After-effect” and/or “Premiere”
  - “Sketch-Up”
  - “Camtasia”
  - “Blackboard” (Bb).
3. Research and self-study related to “World Architecture” with incidental travels.



Above are examples of digital photos taken and/or world architecture visited during sabbatical.

### Three Parts of the Actual Activities:

1. Research and self-study of “Revit” / BIM (Building information Modeler) and related software. This include the initial self-study of Revit 9 (2007 version available in 2006) and later Revit Architecture 2008.<sup>2</sup> The self study include the study of available textbooks, articles, tutorials, web resources and the use of software in developing building-project demos. It also included the study and update of ADT (Architectural Desktop) 2007 and ACD-A 2008 (AutoCAD Architecture 2008).<sup>3</sup> The co-existence and inter-relationship of these software “market leaders” make it necessary for us to continue to offer and to update with these “market leaders” because of the actual job market demand. I have done so by continue to use and stay with the latest versions of these noted “market-leaders”- including spending some of my time as publisher’s “textbook reviewers” for textbooks for Architectural Desktop 2007 and AutoCAD Architecture 2008. I was prepared to (and starting Fall 2007, have already) included Revit 2008 with ACD-A 2008 in our Arch 18 course. While our official course outlines are software non-specific by design, such flexibility allow us to

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<sup>2</sup> With the fast pace of technology improvements, it is a constant effort to stay current. New versions of software are very much like constantly moving targets. The study and the use/application of the software in developing teaching materials such as demo videos (of example building projects) had to be updated and/or adaptable as soon as Revit Architecture 2008 became available in 2007.

<sup>3</sup> AutoCAD 2007, ACAD 2008, ADT-2007, ACD-A 2008 and their predecessor groups of software still take the largest market share in the design/construction industry and have been our main teaching software in our Arch 16, Arch 18, Arch 26 and related courses. As Revit is introduced into our program (in 2007), and gradually known to the industry as a whole, it will likely co-exist with AutoCAD, ADT/ACD-A for some years to come although it is anticipated that Revit will increase in importance and grow in market share in the architectural design and construction industry.

offer the most current technology as well as multiple software as we adjust to industry job-market demand and student interests. (Anticipated and/or current software used, however, are usually noted in the class schedule as an information item.) Please see “Further Report” section to follow for description on how demo videos are developed. Examples of currently available demo videos are listed in Appendix D, under each course of Blackboard’s “Assignments” area where external links to video files (stored in web-server) are clicks away. In addition, included in Appendix E, are several sets of reduced/copied example portfolio pages showing student work and evidence of “Student Learning Outcome” from the Fall 2007 semester. (These portfolio pages are from students just completed my Arch 18 [Architectural CAD Elements], Arch 21 [Architectural Design II] and/or Arch 28 [Architectural Illustration and Animation] courses in Fall 2007.) The 4 sets of portfolio example pages in Appendix E are:

- a) The Arch-18 portfolio (of student Jose Gomez) - 28 pages showing 3 architectural building projects completed in the course. The smallest project (Project 1) using primarily AutoCAD 2008, and the two larger projects (Project 2) using ACD-A-2008 and (Project 3) using Revit Architecture 2008, respectively.
- b) The Arch-28 portfolio (of student Jose Gomez) – 5 pages of Illustrations of the “Revit” building project from Arch 18. (Said building project was also animated in this course using 3DS-Viz 2008.)<sup>4</sup>

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a) <sup>4</sup> The student animation videos are large in file sizes. They are available in the department server and may be included in the attached DVD if file size permits .)

- c) The Arch-28 portfolio (of student Max Lang) – 5 pages of Illustrations of another “Revit” building. These pages were lay-out with the help of “photoshop” after architectural renderings were first produced in the course. (Said building project was also animated in this course.)
- d) The Arch-21 portfolio (of student Jean Pierre Cuba) – 4 pages of Illustrations of Architectural Design Project 1 and 2 (using Revit-Architecture 2008 and 3DS-Viz 2008 and 3DS-Max.)
- e) Some other portfolio examples are included in the attached VCD/DVD when file-sizes permit. Due to file types and file size limitations, most student work examples are only saved on the department server. (Some student example files need special software to open.)

These student work examples show several students’ integrated practical applications of Revit, 3DS-Viz, SketchUp, Photoshop, etc. in Architectural Design, Architectural Illustration and Animation. Some examples of lecture-demo videos of Revit projects are also included in Appendix B (A Supplemental Powerpoint Presentation of the Sabbatical Report with imbedded video clips.) and/or the attached VCD/DVD disk for reference.



Student portfolio examples of Arch 18/28, and Arch 21 showing buildings done using Revit 2008

2. Research and self-study of other digital multi-media resources (especially, but not limited to, “Camtasia” and “Blackboard” - 2 out of the 5 software named in the original sabbatical plan) – and used them for preparing classroom resources and demo videos so that our students can have 24/7 access through the web – either before, during and/or after class lecture and/or lab time. (Please see further descriptions under the next “Further Report” section on how these materials are developed and examples of the developed resources in Appendix B, Appendix D, Appendix E and the attached DVD disk.) In addition, I also:

- a) Participated during the 06-07 year in assist/teaching the basic “Blackboard” trainings for other faculty colleagues (after completing my own basic and advance trainings).
- b) Used and practiced “Sketch-Up” and “Photoshop” (in addition to the Camtasia and Blackboard software particularly noted above). Although we do not officially teach these in our courses, these popular and practical software (named in the original five in the sabbatical plan) are widely available to our students and in the labs. They are widely used to produce architectural work in many of our courses, including (but not limited to) Arch-21 (Arch. Design II), Arch-28 (Arch. CAD Illustration and Animation), etc. which I also regularly teach.

3. Research and self-study related to “World Architecture” (new Arch 31 and 32 courses) -including 2 months of overseas travel (to Asia and Europe) visiting world architecture in addition to internet/library or other research/collections. (Please see some example pictures included throughout this report and some example digital pictures I personally took included in the attached DVD disk. Due to large file sizes of high resolution pictures, the majority of pictures are stored in the department server only. Printed example pictures of digital resources obtained through web research are also included in Appendix F and Appendix H.)



3D photo by Allan Silliphant by permission (may be viewed in stereo using anachrome glasses)

## **FURTHER REPORT OF RESEARCH/STUDY ACTIVITIES**

Further description of the three areas of research/study (including personal travel/study experience) corresponding to the sabbatical proposal follows:

1. **Research/Study Project to learn “Revit”, the new BIM (Building Information Modeler) by Autodesk for incorporating Revit/BIM and RP (Rapid Prototyping) in our curriculum**

As planned for this activity, my research/study during the Fall 06- Spring 07 (and subsequent actual applications in courses) included (but not limited to) the following:

- Researched/studied **Revit 9** (2007 version) and the newer version of **Autodesk Revit Architecture 2008** (available in 2007) and related white papers on the subject.<sup>5</sup> This included the study of textbook (Mastering Autodesk Revit Building by Aubin, 2006-Thomson Delmar Learning), tutorials and information related to BIM such as those available at [www.autodesk.com/bim](http://www.autodesk.com/bim).
- Updated myself on AutoCAD (2007, 2008), new **ACD-A-2008** (AutoCAD Architecture 2008), which is “Intelligent Object” based and an updated new version of ADT (Architectural Desktop) 2007.<sup>6</sup> This group of software has been, and will remain competitive and viable in the industry and likely to co-exist with Revit for some years to come.

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<sup>5</sup> Related white papers such as:

- **Autodesk Revit: Implementation in Practice** (a one page abstract/ announcement of the copy-righted report).
- **Autodesk Revit Building for AutoCAD Users** – a copy-righted white paper available for licensed users at: [www.autodesk.com](http://www.autodesk.com)
- **Revit Interoperability with CAD** (please see Appendix G).

<sup>6</sup> Before I started the sabbatical leave in Fall 2006, we used ADT-2006 (Architectural Desktop 2006) for our Arch 18 and Arch 26 – Architectural CAD courses.

- Acted as publisher's textbook reviewer of Architectural Desktop 2007 and AutoCAD Architecture 2008 (Goldberg 2008, Pearson Prentice Hall).
- Produced, updated (and uploaded to web-server for student 24/7 access) various demo videos of building project assignments using AutoCAD (various versions up to 2008), ADT (Architectural Desktop various versions up to 2007), ACD-A-2008 and Revit (up to 2008 version). Included/listed in Appendix B, Appendix D and attached DVD are many examples of Demo Videos on how to create building projects using Revit Architecture 2008. The procedures these videos are produced are:

a) After self-study, practice and familiarity of the (Revit/BIM) software during the sabbatical, I either pre-record, record live or after a lecture/demo/discussion, I will redo a demo for student memo/refreshers. I use "Camtasia" as the media recorder for the "raw" recordings. (Please see Activity 2 below on "Camtasia"). The raw media recordings will show computer screen action and my voice as the instructor while the building elements are produced "live" using the (Revit/BIM) software.

b) The raw recording(s) are then edited (cut and/or spliced) and voice enhanced (often necessary) using "Camtasia" again as a video editor to produce satisfactory video in "Window-Media-Video" format (or ".wmv" files) suitable for our lab server and in class/lab access by students (for in-lab preview or review of a lesson-demo).

c) the ".wmv" video files are then also uploaded through FTP software to a department web server for later web-access. And,

d) Exterior links in “Blackboard” are then set-up in the appropriate course content area (usually under “Assignment”) with some written clarifications and notations. These one-click away web-links to video demos are identified with a “Globe or Earth” icon and then made available to the registered student’s 24/7 access anywhere web access is available.

- We have been using **ADT-2007** and **ACD-A-2008** (available in 2007) in our Arch 18 and Arch 26 Architectural CAD courses. We have also (as planned)<sup>7</sup> phased in **Revit 9** and **Revit Architecture 2008** starting 2007. While there are many demo videos already produced (as described above) and currently available (see various Appendix), these videos are also constantly been updated and enhanced as updated software become available (and often as each-time a similar or related demo is made/given again). These demo-videos allow the students to either preview, review or repeat the software procedures which often take more than one-try to master. It also helps as a make-up lesson when a student misses a class-demo. Based on feed-backs from our students, they are quite impressed, and quickly got used to, the availability of these 24/7 supplemental digital resources through the internet via the “Blackboard” (see activity 2 below). The inclusion of Revit/BIM (with the other “market-leader” software) is important for our departmental programs at Mt. San Antonio College to continue at the forefront of technologies. (Please see Appendix E for example portfolios showing student

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<sup>7</sup> The plan was to start phasing in **Revit 9** (or latest version, i.e. **Revit Building 2008**) in Fall 07 or Spring 08. (Either as a part of the yearly 2-4 sections of Arch 18 and 1-2 sections of Arch 26 or as a separate section in each of the Arch 18/26 courses – depend on anticipated enrollment demand and departmental management of course-offerings).

projects produced in Fall 2007 using AutoCAD 2008, ACD-A-2008 and Revit Architecture 2008.)

- In addition to using Revit 2008 in the Arch 18-Arch. CAD course, the practical use of the software are already been integrated into building projects across other courses. (Of course, this is currently only limited to more advanced students who enroll in, or have taken, multiple related courses such as Arch 18-Arch. CAD and Arch 28-Arch. Illustration and Animation; and/or Arch 18 and Arch 21- Arch. Design). Some of my students who learned Revit 2008 in Arch 18 have already used the software for creating Architectural Design Projects in Arch 21 and Architectural Illustration and Animation Projects in Arch 28.<sup>8</sup> Such integrated student learning of software for practical architectural design project and design presentation across course “silos” are good examples and evidence of Student Learning Outcome.

2. **Research/study project to learn at least two of the following other new software (for incorporation into our programs for our students in design, presentation, and preparation of portfolios or as general teaching/learning tools.):**

- Adobe “Photoshop”
- Adobe “After-effect” and/or Adobe “Premiere”
- “Sketch-up”
- “Camtasia”
- **Bd (Blackboard Academic Suite),**

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<sup>8</sup> Please see example of student portfolio of an animation walk-through video clip (from Arch 28) of the Revit building project (from Arch 18) included in the attached DVD.

I am happy to report that instead of two, I have studied at least 4 of the listed software, namely Photoshop, Sketch-up, Camtasia and Blackboard, especially **“Camtasia”** and **Bd (Blackboard Academic Suite)**. I have been using **Camtasia**<sup>9</sup> and **Bb** extensively to digitally record/edit/enhance teaching videos and set-up courses I am scheduled to teach (Arch 14, Arch 16, Arch 18, Arch 21 and Arch 28) on Blackboard for student access 24/7 through the internet. (Please see four step procedures - a), b), c), d) as described in the above activity 1.) Due to large file sizes, and limitation of printed report on digital video resources, I have included in the Appendix D samples of some of the Blackboard screens as seen by our students on the internet.<sup>10</sup> Although additional teaching/demo videos will be produced and/or refined weekly on an on-going basis, many videos have been produced and are currently already available in various courses through the Blackboard web links.<sup>11</sup> It must be noted that all Blackboard courses are still (and will always be) “work-in-progress”. Additional contents are being developed and added weekly. All contents will also be continuously updated and/or improved.

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<sup>9</sup> Although there are only 5 or so licensed copies of Camtasia software in our department (primarily for faculty use in recording instructional demo videos), it is also very useful in student course work such as adding audio to enhance architectural walk-through and fly-around animation videos produced in my Arch 28- Arch. Illustration and Animation course. An example instructional video on how to “Add Audio to Video” for student animation project (for advanced Arch 28 student use) are also included in the attached DVD.

<sup>10</sup> Please note that each of the item preceded with an “earth” or “globe” icon, under the “Assignment” sections of each course in the Blackboard Academic Suite is an “External Link” – when a student click on it, it will open a demo video showing (software) procedures related to a noted assignment.

<sup>11</sup> Please see examples of some of these videos listed in Appendix D and copied on the attached DVD disk for reference. (For easier sharing/access/update and due to the large file sizes and large number of videos, it is more practical that these files continue to be stored in our departmental servers and web-servers).

3. **Research and compilation of resources for our proposed new “World Architecture” courses Arch 31 and Arch 32 (recommended by our advisory committee).**<sup>12</sup>

As planned, (in addition to collecting digital resources) I personally visited and took first-hand digital photos of world architecture by traveling to Asia (Japan and China for the month of March 2007) and Europe (Portugal, England, Spain, France, etc. for the month of May 2007). Due to large number of digital photos taken, it is impossible to include them all in this written report. I have however, included some samples (with reduced resolution for small size photo prints) through out this report. The larger-file-sized (thus better resolution) digital photos are available through our departmental CAD lab server as additional resources for our World Architecture and other related design courses. (Over 1300 digital files of architectural pictures taken during the sabbatical period are also included in the attached DVD). In addition, other digital media resources other than first-hand pictures are also collected, such as (but not limited to) the following:

- An extensive DVD collection of world architecture started in our department during the year 2006 and 2007 (thanks to the generous special funding available to support my suggestions, selections and requests).

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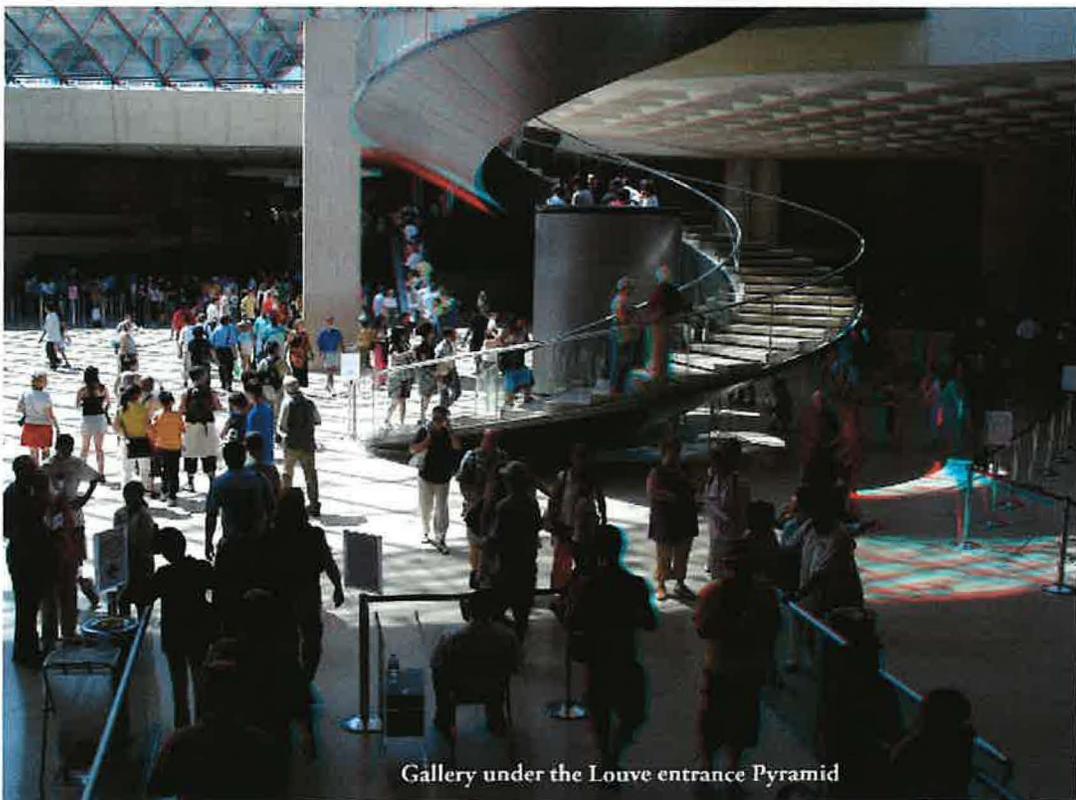
<sup>12</sup> The original proposal noted that the resources may be researched through the internet and may include some incidental travel. The materials generated may also be the basis (not part of the sabbatical) for a future book related to World Architecture. The proposal was “to devote approximately “60% of a semester over the 2006-07 year to research, acquire and organize materials related to “World Architecture” including digital photos, slides, videos, drawings, sketches of significant architecture, either original site photos, drawings, sketches and/or other resources or information through the internet or published materials from libraries or other sources. Some incidental travel may be a part of this research and collection of new original digital photos and to add to my personal experiences of visiting significant architectural sites.”

- Various other digital resources such as those related to 3d-education or stereo vision:
  - [www.3deducation.org](http://www.3deducation.org)
  - [www.3Deducation.com](http://www.3Deducation.com)
  - [www.anachrome.com](http://www.anachrome.com)
  - <http://www.3dstereo.com>
  - <http://www.rainbowsymphony.com/>
  - <http://www.berezin.com/3d/3dglASSES.htm>
  - <http://pclobo.com>
- Various samples of 3d (stereo) architectural photos are printed within this report. (To perceive the stereo effects, please use the “anachrome” glasses enclosed with the report - a pair will be supplied with each copy of the report.)
- Other internet available resources are continuously being discovered. They will be added to the Bb course links. Some examples are noted below:
  - Google “SketchUp” (free download) of 3d modeling software.
  - Google Earth (free aerial photo or “site plan” with 3d terrains anywhere in the world.

## **EXAMPLES OF DIGITAL RESOURCES ACQUIRED (1 OF 3)**

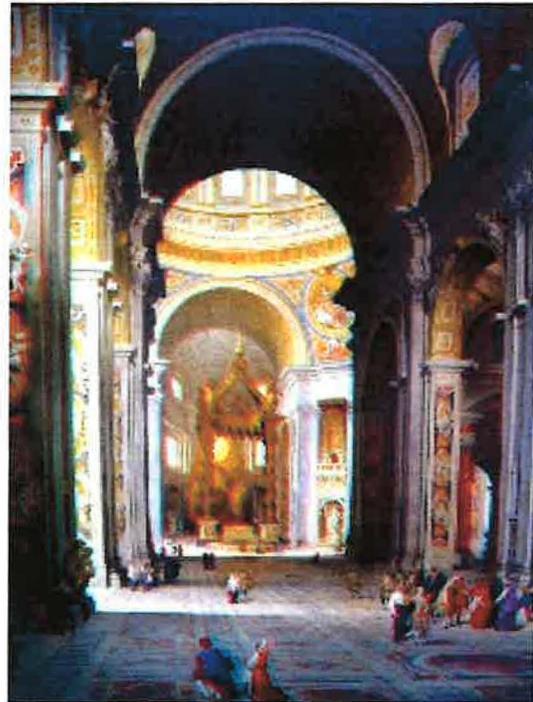


**3D photo by Allan Silliphant by permission (may be viewed in stereo using anachrome glasses)**



**3D photo by Allan Silliphant by permission (may be viewed in stereo using anachrome glasses)**

**EXAMPLES OF DIGITAL RESOURCES ACQUIRED (2 OF 3)**



Bank of England - London



British Museum site model of original Olympic games location



Acropolis - Athens

3D photo by Allan Silliphant by permission (may be viewed in stereo using anachrome glasses)

**EXAMPLES OF DIGITAL RESOURCES ACQUIRED (3 OF 3)**



**Photos by Robert Ho, resolution/file sizes reduced for report prints**

## CONCLUSIONS

### Statement of Value and Benefits to the college:

The value and benefits of the sabbatical activities are multi-faceted and multi-folded:

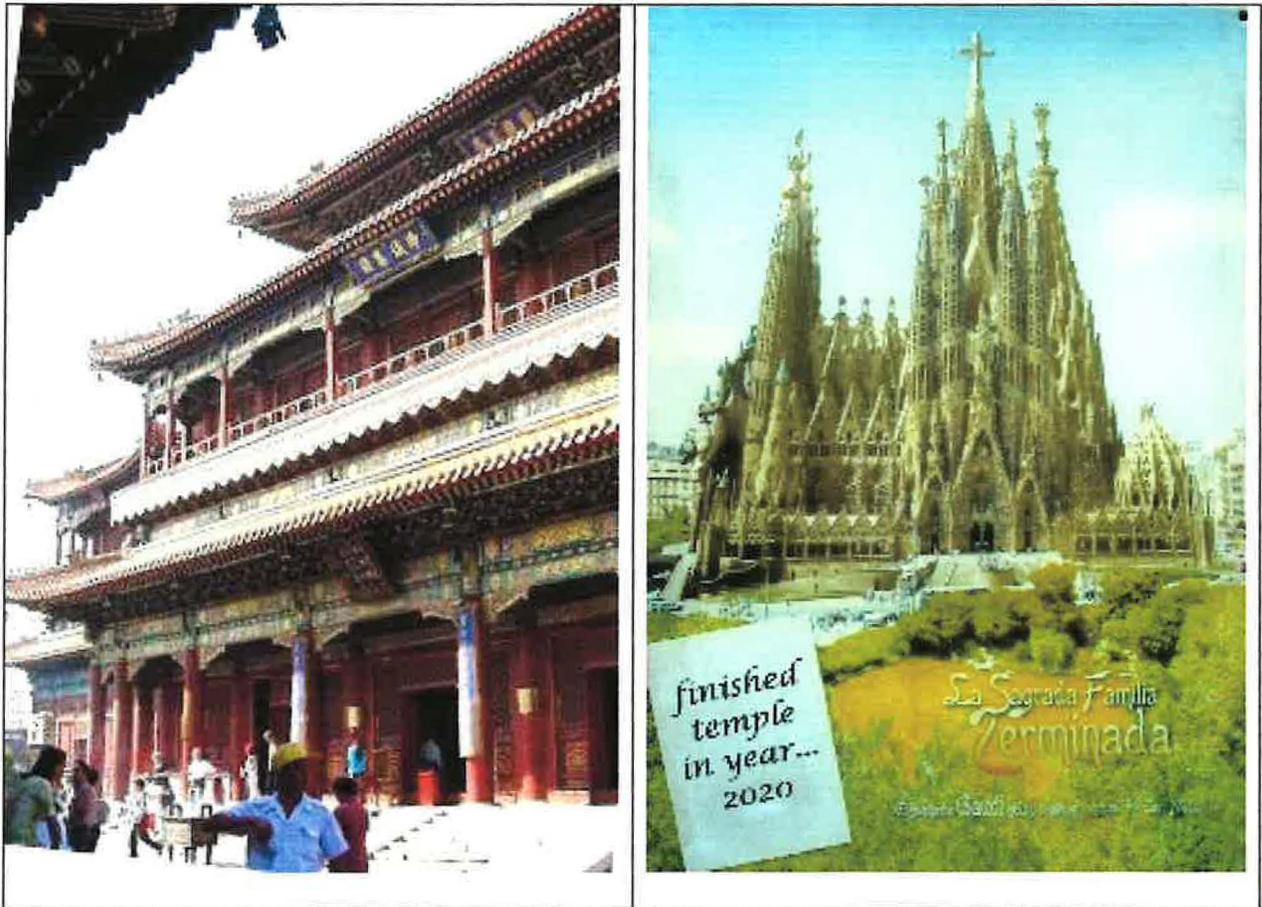
- After winter 07 and Summer 07 trial runs, all courses I teach in 2007-08 are now enhanced with “Blackboard” resources –including (but not limited to) 24/7 internet accessible lecture-demo videos. Students love the accessibility and flexibility.
- As planned, we have been prepared and have already started incorporating BIM/Revit along with 3D Parametric and Intelligent Object based (2008 version) technologies into our courses starting 2007. This effort will continue to keep our program in the forefront of technology and our students competitive in the work-force.
- The integrated use of popular software (such as Sketch-up, Photoshop, Camtasia) with formally taught market-leaders (such as AutoCAD, ADT/ACD-A, Revit and 3DS-Viz) available in our lab across “course” silos are growing trend and indication of true “Student Learning Outcome” to be celebrated. Our students are more employable and successful when these up-to-date tools are comfortably used beyond course boundaries.



More examples of photos taken or collected

- Our new Arch 31, 32 “World Architecture” courses are being enhanced with additional resources and personal experience. These new courses round off our transfer program and meet the general education interests of our students.

In Conclusion, the sabbatical leave experience is very positive to the applicant and it brings great benefits to our department programs, the college and especially to our students by enhancing student learning and success. The Sabbatical Leaves Program is very valuable, indeed.<sup>13</sup>



More examples of photos taken or collected

<sup>13</sup> I wish to use the opportunity to express my sincere gratitude to the Salary and Leave’s Committee, the College and the Board of Trustees for offering such a great Sabbatical program.

## **Appendix – A**

**Application for Sabbatical Leave (for Fall 2006 - Spring 2007)**

**Proposal as approved by the Sabbatical Leaves Committee**

**Mt. San Antonio College**  
**Application for Sabbatical Leave for Fall 2006 - Spring 2007**

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Proposed by **Robert I. Ho**, Chair of Architecture and Engineering Design Technology

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(Description of Activities revised 1/15/2006)

**Background Information**

Since I joined the department in 1984, the department and the industry/profession have experienced revolutionary changes in the past two decades primarily due to the rapid changes in the use of technology, changes in industry/market demands, and the changes of our students (in terms of student compositions and student expectations). Reflecting these changes, the department name changed from Department of "Drafting" to "Drafting and Design" to "Drafting, Design and CADD", to "Architecture and Design", and finally to the current Department of "Architecture and Engineering Design Technology".

In response to these changes in technology, market and student expectations, the Mt. SAC's architectural technology and engineering design technology A.S. degrees and certificate programs evolved over the last two decades with major curriculum changes occurred in the late 1980's, late 1990's and currently in the mid 2000's.

In the mid 1980's, the first CADD (Computer Aided Design and Drafting) course in a small CAD lab equipped with 6 computers was offered in the department. By the late 1980's, the "ARCH" prefix replaced many of the "DRFT" courses. In addition, in keeping current with the industry demands and the technology of the time, one CADD course became required for our architectural technology certificate and A.S. degree programs.

Additional CAD courses were added in the late 1980's and 1990's in response to increased work-force demands for technology and CAD proficient para-professionals. CADD degree and certificate programs were also added. Due to capital budget limitations (and availability of faculty proficient and comfortable in technology), our 5 studio-classrooms gradually became 3 CAD labs (with 18 CAD stations each) and 3 traditional design studios. Reflecting our facilities, our courses as written in the official curriculum are now approximately 40% solely CAD/computer based, 40% traditional (manual) design studio based and 20% lecture based.

However, as our students becoming more and more technology accustomed, the market more and more technology essential and dependent, the integration of our technology/computer use with traditional (manual) design studio/lecture in all of our courses is becoming an inevitable trend – reflecting the now well-known fact of a standard architectural and engineering office work-station, i.e. each design/drawing station has a large design surface plus a computer loaded with several CAD, graphics and related software and internet connection. CAD and computer proficiency and daily usage are essential for 90% or more of the related jobs.

Due to rapid advances in CAD and multi-media software, the continuous need to keep current is essential for all faculty members in the department, especially those teaching

CAD/multi-media based courses. Since I joined the department (as the first full-time licensed architect) in 1984, I have been teaching more CAD based courses (especially the more advanced architectural CAD) than any other faculty in the department. In addition, I also encourage students in non-CAD based courses to take advantage of technology whenever/wherever appropriate because I believe in the integrated use of all media/tools to get the job done.

The fact I teach more CAD courses happened partly by choice and partly by default. In general, it takes a faculty teaching CAD (especially more advanced course) a lot of extra time every year in order to keep current with software and related technology advances, I had to spend a lot of time (including summer, week-ends, etc.) for faculty training, self-study and attending workshops, seminars and conferences. Although I regularly participate in more faculty software training and attend more technology seminars and conferences than other faculty, I find it hard to truly keep-up with the moving target of technology progresses and software advancements, especially major revolutionary jumps.

To keep the department's programs in the fore-front of technology developments and to better serve our student's learning, I am proposing the following sabbatical activities.

**Description of Proposed Sabbatical Activities** - The three self research/study projects described below will be conducted over the 2 semesters of Fall 06 - Spring 07, using approximately 1/3 each of the equivalent full-time academic year. (If this proposal is approved, I plan to also apply 6 LHE or 20% full-load of previously banked leave time to make up the equivalent of a year's full-time salary.)

A. **Research/Study Project to learn "Revit", the new BIM (Building Information Modeler) by Autodesk for incorporating Revit/BIM and RP (Rapid Prototyping) in our curriculum** - (I plan to devote approximately 1/3 time of the Fall 06- Spring 07 semesters for this research-study activities.)

- **What and Why** - "Revit" is the new parametric Architectural BIM software highly promoted by the world's dominant CAD software company "Autodesk". Since the late 1980's, ACAD (also by Autodesk) has been used by most design firms as the standard production drawing tool (primarily 2D). ACAD has since been the industry dominant CAD software in architecture, engineering and construction. Parametric BIM and RP (Rapid Prototyping) today (since the early 2000's) appear to be very much like ACAD was in the late 1980's and early 1990's. Revit and ADT (Architectural Desktop, which we currently use and teach, also by Autodesk) appear to be poised to become the next architectural and construction industry standard in the near future.
- **How** -Methods of the research and self-study of Revit/BIM will include attending conferences and teacher trainings (when available). In addition, I plan to learn and apply the new software by doing tutorials as well as devising student assignments, projects and demos using the software. Related to this activity, I plan to also further incorporate our newly acquired RP (Rapid Prototype)/3D printing capabilities into our courses with this research study.

- **Results of the research/study** – knowledge and resource materials will be developed so that at least one section of Arch 18 (Architectural CAD Elements – our intermediate level 3D CAD course) may be offered based on Revit or using Revit as alternate software starting 2007-08 year. In addition, RP/3D printing will be further integrated into teaching modules in appropriate sections of our courses (such as Arch 18/26/26 - Arch CAD Elements, CAD Working Drawings, Architectural Illustration and Animation). Since the early 1990's, our intermediate architectural CAD courses (currently Arch 18 and 26) have always stayed current with new technology by using Autodesk's ADT (Architectural Desktop) software (and its predecessors of industry standard ACAD add-on versions such as AEC-Architectural, ASG, Softdesk, etc.). From various conferences and professional reports, BIM based on 3D parametric CAD and RP/3D printing are quickly becoming the next major technology-driven advances in the architectural and construction industry since the over-whelming adoption of (basic) CAD in the 1980-90's. It appears to be the right time for us to take these needed steps to stay at the forefront of technology and include Revit – BIM and RP/3D printing in our (future) course offerings.
- **Special Note:** The research-study on Revit – BIM stated above will be conducted in addition to continued regular efforts devoted to keep-up with software series we currently and will continue to teach, such as ACAD (AutoCAD) 2006 (2007 or most current version when available), ADT-Architectural Desktop 2006 (2007 or most current version when available), 3D Studio Viz (2006, 2007 or most current version), 3D Studio Max 7 (or most current version), PowerPoint, etc.

**B. Research/study project to learn at least two of the following other new software for incorporation into our programs for our students in design, presentation, preparation of portfolios or as general teaching/learning tools.**

I estimate devoting approximately 1/3 time over the Fall 06 – Spring 07 year for this activity. These following listed software are either currently available to our students in our labs or could be purchased/installed in our labs in the future):

- Adobe “**Photoshop**” - currently installed in some of our lab computers (but not “taught” in courses), useful for architectural presentation, illustrations, design and portfolio preparation. (Arch 10, 13, 21, 23, 27, 28 and 29)
- Adobe “**After-effect**” and/or Adobe “**Premiere**”, useful for editing and post-production of animation video produced from architectural walk-through and fly-through in Arch 28 and EDT 28 (not currently available in our labs).
- “**Sketch-up**”, which is available free to our students (to install in their own computers for educational purpose when officially registered through faculty license) – a major advantage over all other software we officially teach and use in the labs (none of them free for students to install at their own computers). Sketch-up appears to be lighter, easier to learn but quite useful in many of our courses, such as Arch 10, Arch 13, Arch 21, 23 and portfolio preparations, etc.
- “**Camtasia**”, which we do not “teach”. It is our newly acquired video recording software used to record our CAD lecture/demos for student reference and as a learning-assistance tool. We have been using a similar “Camstudio” in the last

couple of years with some success. Camtasia appears to be more capable than Camstudio. I would like to devote some time to learn the many features of Camtasia to take full advantage of this teaching tool.

- **Bd (Black-board)**, a known teaching tool recently selected as a campus standard for Mt. SAC for distance learning, hybrid or standard offering courses.

C. **Research and compilation of resources for our proposed new “World Architecture” courses Arch 31 and Arch 32 (recommended by our advisory committee) and/or materials for a similar titled book** – I plan to devote approximately **60%** of a semester over the 2006-07 year to research, acquire and organize materials related to “World Architecture” including digital photos, slides, videos, drawings, sketches of significant architecture, either original site photos, drawings, sketches and/or other resources or information through the internet or published materials from libraries or other sources. Some incidental travel may be a part of this research and collection of new original digital photos and to add to my personal experiences of visiting significant architectural sites. The materials generated may be a resource for the newly proposed “World Architecture” courses, a base for a future book (not a part of this sabbatical) and/or a general reference and resources for our various architectural design and related courses. Visiting significant architecture has always been an inspirational experience good for personal recharge and growth, especially for the architectural profession.

**Anticipated Value and Benefit of the Proposed Sabbatical Activities to the Applicant, the Department and the College:**

- A. Incorporation of the new BIM (Building Information Modeling) and 3D parametric technology into our architectural curriculum starting 2007-08 year – keeping Mt. SAC’s architectural program in the forefront of technology which is essential for our students to be competitive in the work-force.
- B. Potentially offering the newly proposed “World Architecture” courses (in response to Advisory Committee recommendation) with enhanced supporting resources to round-off our architectural (transfer) curriculum and/or to meet the general education interests of Mt. SAC students.
- C. Instead of barely keeping up with the moving target of rapid technology changes, finally having a year’s time (fall and spring semesters in 2006-07) to get to the forefront of pertinent technologies.
- D. Personally refreshed and updated as a teaching faculty. And in addition, spread the information, experience and enthusiasm to other faculty members.

**Abstract of the Sabbatical Plan for use in the Board of Trustee Agenda**

Research and self-study of “Revit”, the new BIM (Building information Modeler) and other digital multi-media resources to enhance and/or update the Architectural Technology Curriculum at Mt. San Antonio College (2 semester sabbatical leave application for Fall 06-Spring 07 with the use of 20 % previously banked leave time).

## **Appendix – B**

### **Sabbatical Leave Report – Supplemental (Power Point) presentation**

Mt. San Antonio College  
Sabbatical Leave Report  
Supplemental Powerpoint Presentation

Fall 2006 & Spring 2007  
Prof. Robert I. Ho  
Architecture and Engineering  
Design Technology  
Report Submitted 9/3/2007  
Revised 12/31/2007



Title / Abstract –  
Purpose of the Sabbatical Leave

- Research and Self-Study of "Revit"/BIM (Building information Modeler) and other digital multi-media resources to enhance/update the Architectural Technology Curriculum at Mt. San Antonio College.

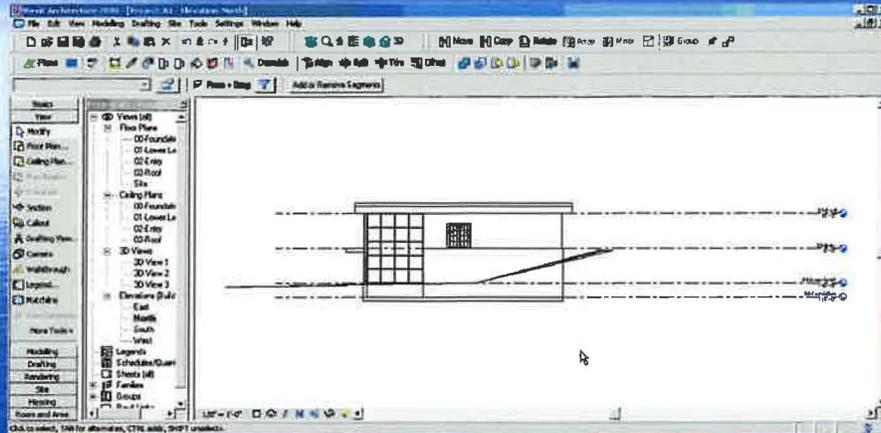
### Three Parts of the Planned Activities:

1. Research and self-study of Revit / BIM (Building information Modeler) and related software.
2. Research and self-study of other digital multi-media resources (min. 2 new software out of named 5).
3. Research and self-study related to "World Architecture" with incidental travel and personal visits.

### Actual Activities - Fall 06 & Spring 07:

1. Research and self-study of "Revit" / BIM (Building information Modeler) and related software (including 2006 textbook study, tutorials, white-papers and reviews of 2007 and 2008 textbooks), - prepared and included these in Fall 07 and future courses.
2. Research and self-study of other digital multi-media resources (especially "Camtasia" and "Blackboard") – and used them for preparing classroom resources (examples to follow).
3. Research and self-study related to "World Architecture" (new Arch 31 and 32 courses) - including 2 months of overseas travel (to Asia and Europe) visiting world architecture.

Example of "Revit" Lecture-Demo Videos students can access 24/7 via "Blackboard":



This is a demo on "How to Set-up Camera-Perspective Views" in a "Revit-Architecture-2008" building. (double-click picture for video)

Examples of world Architecture sites visited:



## Value and Benefit of the Sabbatical Activities are (1 of 4):

1. 24/7 student access to computer lecture-demo videos " via the internet - After winter 07 and Summer 07 trial runs, all courses I teach in 2007-08 are now enhanced with "Blackboard" internet resources –including (but not limited to) computer lecture-demo videos students can access 24/7. Students love the flexibility and accessibility.

## Examples of Demo-Video students can access 24/7 via "Blackboard":



Double-Click  
pictures to  
activate  
media

This is the result Architectural Animation video after a lecture-demo on "Add Audio to Video using "Camtasia"

## Value and Benefit of the Sabbatical Activities are (2 of 4):

2. As planned, we are prepared and have already incorporated Revit/BIM, 3D Parametric and Intelligent Object based (2008 versions) technologies into our curriculum starting 2007-08 year. This will continue to keep our program in the forefront of technology and our students competitive in the work-force.

## Example Portfolio Items Showing Student Learning Outcome and the Early Results of Updated Program (Using BIM/Revit 2008) (1 of 2):



## Example Portfolio Items Showing Student Learning Outcome and the Early Results of Updated Program (2 of 2):



## Value and Benefit of the Sabbatical Activities are (3 of 4):

3. Our new "World Architecture" courses are being enhanced with additional resources and personal experience. These new courses round off our architectural transfer program and meet the general education interests of our students.

## Example of Digital Resources: (World's Tallest Buildings)



**Skywards**

**Location : Paris**  
**Height : 318 Meters**  
**Floors :**  
**Built : 1887**

Double-Click  
picture to  
activate media

## Value and Benefit of the Sabbatical Activities are (4 of 4):

4. The applicant is personally refreshed, renewed and updated as a teaching faculty. In addition to having already participated in assisting/teaching colleagues in "Blackboard" trainings, I will spread the information, experience and enthusiasm to other faculty members.

## In Conclusion:

- The Sabbatical experience is beneficial not only to the applicant, it brings value to our department, our programs, our college and especially to our students by enhancing student learning and success.
- The Sabbatical Leaves Program is very positive, beneficial and valuable to all.

I wish to use the opportunity to express my sincere appreciation and gratitude to the:

- Salary and Leave's Committee
- The College and the Board of Trustees for offering such a great Sabbatical program.

Thank You!



Double-Click  
picture to  
activate media

## **Appendix – C**

### **Salary and Leaves Committee -**

### **Original processing forms for Application for Sabbatical Leave**



# SALARY AND LEAVES COMMITTEE

## APPLICATION FOR SABBATICAL LEAVE

Name of Applicant: **Robert L. Ho**

Date: **11/28/05, rev. 1/15/06**

Department: **Architecture and Eng. Design Tech.**

Division: **Applied Technology and Health**

Address: **4255 Tewa Way**

City: **Riverside, CA**

Zip: **92509-7802**

Date of Employment at Mt. SAC: **9/1984**

Dates of last sabbatical: From **N/A** To **/**

Length of sabbatical leave requested:  One semester

Two semesters

Effective dates for proposed sabbatical leave: Fall (year): **2006**

Spring (year): **2007**

Study

Travel

Project

Combination (specify): **Self Research Study and Project (with possible incidental travel)**

**NOTE: Sabbatical periods are limited to contractual dates of the academic year.**

**Attach:**

1. A comprehensive, written statement of the proposed sabbatical activity(ies) including:
  - description of the nature of the activity(ies)
  - timeline of the activity(ies)
  - an itinerary, if applicable
  - proposed research design and method(s) of investigation, if applicable
2. A statement of the anticipated value and benefit of the proposed sabbatical activity(ies) to the applicant, his/her department or service area, and the College.
3. An abstract of your plan for use in the Board of Trustees agenda.

Any change or modification of the proposed sabbatical activity(ies) as evaluated and approved by the Salary and Leaves Committee must be submitted to the Committee for reconsideration.

Applicant's Signature:

Date: **1/15/2006**

*(continued on the next page)*

**ACKNOWLEDGMENT BY THE DEPARTMENT/DIVISION**

The acknowledgment signatures reflect awareness of the sabbatical plan for the purpose of personnel replacement. Comments requested allow for recommendations pertaining to the value of the sabbatical leave plan to the college.

Applicants must obtain the signatures of acknowledgment prior to submitting application to the Salary and Leaves committee.

**Department Chairperson:**

Signature:

*Robert A. Ho*

Date:

1/15/2006

Comments:

As the current (and a past two and half year term) department chair myself, I am in support of my sabbatical proposal not only on self-realization (or selfish) reasons for personal growth but also because I have a good record of taking needed initiatives and a reasonably good perspective of the department's historical developments and future needs and directions in response to the technology changes affecting the professions and industry, the work-force demands on our program offerings and our student's increased learning needs and educational expectations.

As an example, when I saw various small grant opportunities for the department faculty, I was the first to initiate and write grants involving the rest of the department faculty. When I saw the need and demands for late afternoon (4-7 pm), Saturday and (more) evening course offerings, I was the first one to propose, promote and/or personally take the lead to volunteer while encouraging and recruiting other faculty to also participate. Now, I observe the need and the opportunity for the proposed activities for both personal growth and the benefit of department's curriculum enhancement, I am the first to propose and apply for this sabbatical.

As for the staffing need to cover the courses I normally teach while I will be on leave, we have a good adjunct faculty pool to draw from. In addition, if this sabbatical application is approved, I will make sure all the courses/programs will be properly scheduled and staffed with adjunct faculty while I am still the chair in the spring semester of 2006. I also plan to teach the first session of summer 06 and will make sure proper staffing is coordinated with the new department chair-elect well before I leave for the fall semester of 06.

**Division Dean:**

Signature:

*John V. Genova*

Date:

1-17-06

Comments:

I support Robert's request and appreciate the complexity and changing nature of the field of Architecture. I believe that Robert and the Architecture program would benefit from this project.

**Note:** Deans are requested to submit a statement of recommendation regarding the value of the sabbatical plan to the College, division/department, and individual, in consultation with the appropriate department chairperson.

gs

**ACKNOWLEDGMENT OF THE APPROPRIATE VICE PRESIDENT (INSTRUCTION OR STUDENT SERVICES)**

Signature:

Date:

Comments:

Applicant: **Robert I. Ho**

For Salary and Leaves Committee use:

	Date:	By:
Received by Salary and Leaves Committee	<input type="text"/>	<input type="text"/>
Sent to individual Committee Members for review	<input type="text"/>	<input type="text"/>
Reviewed by Committee as a whole	<input type="text"/>	<input type="text"/>
Action:		
<input type="checkbox"/> Acceptable for Consideration		
<input type="checkbox"/> Acceptable with Additional Information – additional information requested	due back	<input type="text"/>
<input type="checkbox"/> Questionable		
<input type="checkbox"/> Unacceptable - does not meet eligibility requirements		
Recommend to Board?		
<input type="checkbox"/> Recommended to Board of Trustees	<input type="text"/>	
<input type="checkbox"/> Not recommended to Board of Trustees	<input type="text"/>	
Notification:		
<input type="checkbox"/> Applicant notified	<input type="text"/>	<input type="text"/>

Signature:

Chairperson, Salary and Leaves Committee

Date:

## Appendix – D

### Blackboard Academic Suite – Example of Internet Pages

(for Students enrolled in all my courses) including:

- ARCH 14 – Building & Zoning Codes (Announcement; Assignments) (1,1,1)
- ARCH 16 – Basic CAD and Computer Application (Announcement; Assignments with over 60 links to lecture-demo videos) (1, 1-5)
- ARCH 18 – Architectural CAD Elements (Announcement; Course Outline showing Revit [Project-3]; Assignments with over 30 links to lecture-demo videos on ACAD; ACD-A and Revit; and typical staff info page) (1, 1-4, 1-7, 1)
- ARCH 21 – Architectural Design II (Announcement; Assignments, downloadable Syllabi) (1, 1-4, 1-3)
- ARCH 28 – Architectural CAD 3 D Illustration /Animation (Announcement, Assignments at the beginning of semester and end of semester showing list of all 29 posted links to lecture-demo videos) (1-2, 1, 1-4)

Mt. SAC

OLSC

Courses

Community

Content Collection

Faculty

vClass




 Home Help Logout

Announcements

Syllabus

Course Info

Instructor

Assignments

Course Links

FAQs

Mt. SAC Library

 Communication

 Course Tools

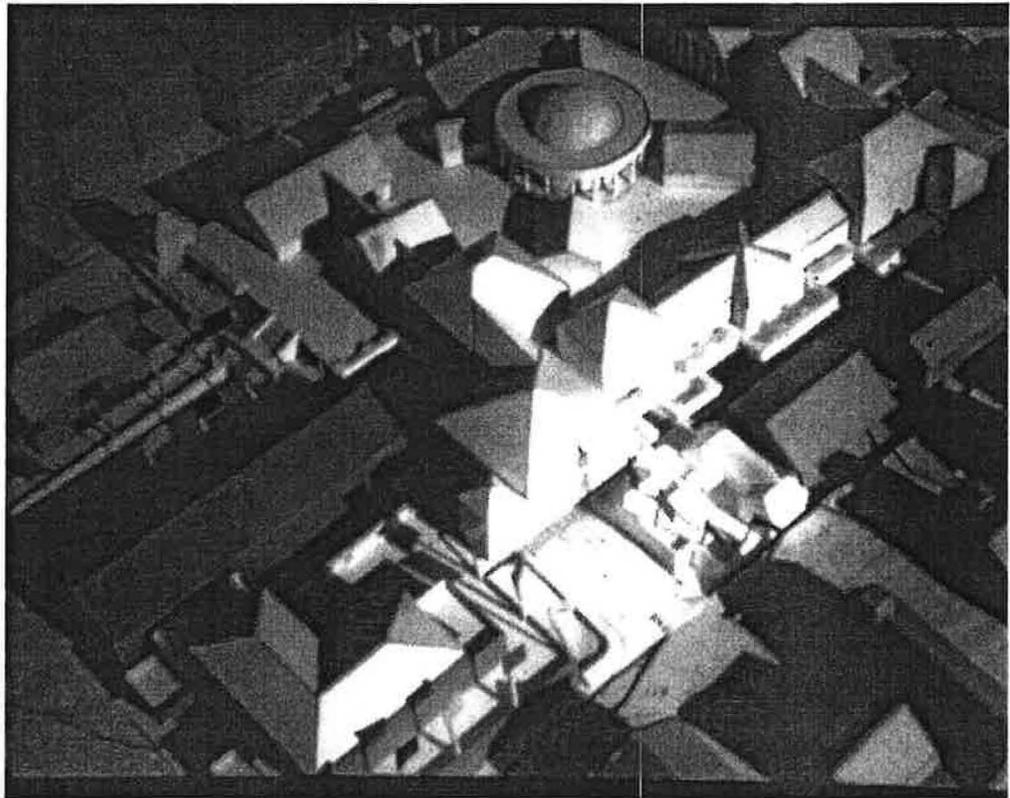
 Course Map

 Control Panel

 Refresh

 Detail View

BLDG &amp; ZONING CODES-103423 &gt; ANNOUNCEMENTS



VIEW TODAY

VIEW LAST 7 DAYS

VIEW LAST 30 DAYS

VIEW ALL

August 18, 2007 - August 25, 2007

Fri, Aug 24, 2007 -- *Welcome*Posted by: Blackboard  
Administrator

Welcome to Arch 14 = Building and Zoning Code

This is the course supplement through Blackboard. Course outline and assignments may be downloaded and printed.

You may also watch additional supplemental videos over the internet as we add more content. Hope this helps. If you come across good web-sites related to Building and Zoning Codes, please let me know. So we can share with others by adding a web-link.

Now go to "assignment" and see if there is anything assigned.

Mt. SAC

OLSC

Courses

Community

Content Collection

Faculty

vClass



Home

Help

Logout

BLDG & ZONING CODES-103423 > CONTROL PANEL > ASSIGNMENTS

## Assignments



Item



Folder



External Link



Course Link



Test



Select: Learning Unit

Go



### 1 Assignment- R1

Enabled: Statistics Tracking

[Arch14-R1-2007.doc](#) (52 Kb)

Modify

Manage

Copy

Remove

Please open the attached file and read carefully the requirements of this report assignment.

Get started as soon as possible because you are likely to encounter various situations and questions as you attempt to do this assignment. Feel free to ask questions the following week if you encounter problems. Like in real life, this is normal and to be expected. The only difference is, I am here to help you find answers. Do your best.

OK

 **Assignments**

 Item  Folder  External Link  Course Link  Test  **Select:** Learning Unit 

[Modify](#) | [Manage](#) | [Copy](#) | [Remove](#)

1  **Assignment- R1**  
*Enabled: Statistics Tracking*  
[Arch14-R1-2007.doc](#) (52 Kb)

Please open the attached file and read carefully the requirements of this report assignment.

Get started as soon as possible because you are likely to encounter various situations and questions as you attempt to do this assignment. Feel free to ask questions the following week if you encounter problems. Like in real life, this is normal and to be expected. The only difference is, I am here to help you find answers. Do your best.

[Modify](#) | [Manage](#) | [Copy](#) | [Remove](#)

2  **Report Assignment R-2**  
*Enabled: Statistics Tracking*  
[Arch14-R2s-2006.doc](#) (31 Kb)

Open the attached file and do the R-2 report accordingly.

[Modify](#) | [Manage](#) | [Copy](#) | [Remove](#)

3  **R-3 Sharing R-2 Report Experience**  
*Enabled: Statistics Tracking*

To learn from each other's experience (through R-2 assignment above), you are required to share your experience with the rest of the class. R-3 report is a presentation to and discussion with the class while the faculty will be acting as a facilitator and resource person. You should follow and use R-2 as a guide and format of your R-3 presentation. Bear in mind that the R-3 report is intended to:

1. Allow you a learning opportunity to make a public presentation to a large group. (Useful if you are to represent a client one day for a project presentation in front of the planning commission, for example.) It is not designed to embarrass anyone too shy to speak. So, do your best and give encouragements to each other.
2. An opportunity to "acknowledge and make (verbal) corrections" to any "errors or omissions" of your R-2 report. We learn and improve through this "acknowledge and correct" process. (By the way, if you do so and show evidence of improved learning, your earned R-2 grade may also be adjusted upward at the option of the faculty:-)
3. An opportunity to share and clarify various real-life actions of zoning and related current occurrences at various local jurisdictions (cities and counties). So, please actively participate and ask questions to your fellow classmates/presenters when appropriate (after they present their R-3's).

Your R-3 report is due (i.e. to be ready to present) one week from the date I return your R-2 report. You will be given one opportunity to present your R-3. You must be ready to present when called-upon (or you forfeit your opportunity to present). Your R-3 is worth 100 points or 10% towards your course grade.

We look forward to your sharing of your experience with the rest of the

[BASIC CAD & COMPUTER APP-111486](#) > ANNOUNCEMENTS



[VIEW TODAY](#)

[VIEW LAST 7 DAYS](#)

[VIEW LAST 30 DAYS](#)

[VIEW ALL](#)

**August 22, 2007 - August 29, 2007**



**Wed, Jan 17, 2007 -- Welcome (rev. 6/07, 8/07)**

Posted by: Blackboard Administrator

Welcome to Arch 16/ EDT 16 Blackboard supplement. You may watch supplemental videos (under "Assignments") over the internet if you missed a class or need a refresher. Hope this helps.

## Assignments

Item
 Folder
 External Link
 Course Link
 Learning Unit

- |  |  |                                       |                                       |                                     |                                       |
|--|--|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|
|  | 1 · <b><u>back-ground-color</u></b><br><i>Enabled: Statistics Tracking</i>                                       | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 2 · <b><u>Title Block - A0a</u></b><br><i>Enabled: Statistics Tracking</i><br>Watch this video if you need help. | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 3 · <b><u>Title Block - A0b</u></b><br><i>Enabled: Statistics Tracking</i><br>Watch if you need help.            | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 4 · <b><u>A0-1</u></b><br><i>Enabled: Statistics Tracking</i><br><br>Added 7/3/2007                              | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 5 · <b><u>A0-2</u></b><br><i>Enabled: Statistics Tracking</i><br><br>Added 7/3/07                                | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 6 · <b><u>A1a</u></b><br><i>Enabled: Statistics Tracking</i><br>Watch this video if you need help.               | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 7 · <b><u>A-2a</u></b><br><i>Enabled: Statistics Tracking</i>  | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 8 · <b><u>A-2b</u></b><br><i>Enabled: Statistics Tracking</i>  | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 9 · <b><u>A-2c</u></b><br><i>Enabled: Statistics Tracking</i>  | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 10 · <b><u>A-2d-ATT</u></b><br><i>Enabled: Statistics Tracking</i>   | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 11 · <b><u>A-2d-ATT-2</u></b><br><i>Enabled: Statistics Tracking</i>   | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |
|  | 12 · <b><u>A-2d-dim-text-size</u></b><br><i>Enabled: Statistics Tracking</i>                                     | <input type="button" value="Modify"/> | <input type="button" value="Manage"/> | <input type="button" value="Copy"/> | <input type="button" value="Remove"/> |

- 

13 · **A-3a**  
*Enabled: Statistics Tracking*

WMV revised file 7/3/07
- 

14 · **A-3b**  
*Enabled: Statistics Tracking*
- 

15 · **A-3b-visual-style**  
*Enabled: Statistics Tracking*
- 

16 · **A-4b-copy-layout**  
*Enabled: Statistics Tracking*
- 

17 · **A-4c**  
*Enabled: Statistics Tracking*
- 

18 · **Arch16-A4-1=2007**
- 

19 · **Arch16-A4-2=2007**
- 

20 · **Arch16-A4-3=2007**
- 

21 · **Arch16-A4-4=2007-Visual Style**
- 

22 · **A5-a**  
*Enabled: Statistics Tracking*
- 

23 · **A-5b**  
*Enabled: Statistics Tracking*
- 

24 · **A5-c-section**  
*Enabled: Statistics Tracking*
- 

25 · **A5-c-UCS**  
*Enabled: Statistics Tracking*
- 

26 · **A-5c-hatch**  
*Enabled: Statistics Tracking*

	27 · <b><u>A6-Arch-units</u></b> <i>Enabled: Statistics Tracking</i> Video on how to set-up Architectural units.	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	28 · <b><u>Arch16-A6-1-Arch Units-Louder.wmv</u></b> <i>Enabled: Statistics Tracking</i>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	29 · <b><u>A-6a-stream</u></b>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	30 · <b><u>Arch16-A6-2-Fixtures-Louder.wmv</u></b> <i>Enabled: Statistics Tracking</i>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	31 · <b><u>Arch16-A6-3-Layer+Dim-Louder.wmv</u></b> <i>Enabled: Statistics Tracking</i>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	32 · <b><u>Arch16-A6-3-Dim-Style-Louder.wmv</u></b> <i>Enabled: Statistics Tracking</i>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	33 · <b><u>Arch16-A6-3-Dim-Style-update-Louder.wmv</u></b> <i>Enabled: Statistics Tracking</i>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	34 · <b><u>A-6b-stream</u></b>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	35 · <b><u>A-6c-stream</u></b>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	36 · <b><u>A-6d-tub</u></b>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	37 · <b><u>A-6e-wc</u></b>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	38 · <b><u>A-6f-block</u></b>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	39 · <b><u>A-6g-door</u></b>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
	40 · <b><u>Arch16-A6-5-Hatch-Louder.wmv</u></b> <i>Enabled: Statistics Tracking</i>	<input type="button" value="Modify"/>	<input type="button" value="Manage"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>

	41 · <a href="#">A-6h-hatch</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	42 · <a href="#">A-7a</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	43 · <a href="#">A-7b</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	44 · <a href="#">A-7c-camera</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	45 · <a href="#">A-8a</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	46 · <a href="#">A-8b</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	47 · <a href="#">A-8c</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	48 · <a href="#">A-8d-screed</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	49 · <a href="#">A-8e-roof-slope</a>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	50 · <a href="#">A8-4</a> <i>Enabled: Review, Statistics Tracking</i> Watch this video if you are way ahead.	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	51 · <a href="#">Arch16-Excel-Estimate-A.wmv</a> <i>Enabled: Statistics Tracking</i>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	52 · <a href="#">Arch16-Excel-Estimate-B.wmv</a> <i>Enabled: Statistics Tracking</i>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	53 · <a href="#">Arch16-Excel-Estimate-C.wmv</a> <i>Enabled: Statistics Tracking</i>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>
	54 · <a href="#">Arch16-A9a.wmv</a> <i>Enabled: Statistics Tracking</i>	<a href="#">Modify</a>	<a href="#">Manage</a>	<a href="#">Copy</a>	<a href="#">Remove</a>



55 · **Arch16-A9b.wmv**  
*Enabled: Statistics Tracking*



56 · **Arch16-A9c.wmv**  
*Enabled: Statistics Tracking*



57 · **Power-Point-1**  
*Enabled: Statistics Tracking*



58 · **Power-Point-2**  
*Enabled: Statistics Tracking*



59 · **Power-Point-3**  
*Enabled: Statistics Tracking*



60 · **Power-Point-3a**  
*Enabled: Statistics Tracking*



61 · **Extra Credit-1**



62 · **Extra Credit-2**



63 · **Portfolio Example**  
*Item is no longer available. It was last available on Jan 26, 2007 3:10 PM.*  
*Enabled: Statistics Tracking*  
**Guadalupe Victoria.ppt** (4.578 Mb)

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ARCH CAD ELEMENTS-103431 > ANNOUNCEMENTS



VIEW TODAY

VIEW LAST 7 DAYS

VIEW LAST 30 DAYS

VIEW ALL

August 18, 2007 - August 25, 2007



**Fri, Aug 24, 2007 -- Welcome**

Welcome to Arch 18 (Architectural CAD Elements) Blackboard supplement. You may watch supplemental videos over the internet if you missed a class or need a refresher. Hope this helps.

Posted by: Blackboard Administrator



**MT. SAN ANTONIO COLLEGE**  
**Department of Architecture & Design**

**Architectural Technology**  
**Computer Aided Drafting and Design**

**ARCH 18 – Architectural CAD Elements**

**Formerly**

**CADD 30      Architectural CADD**

**Professor Robert I. Ho, Architect**

**MT. SAN ANTONIO COLLEGE**  
**COURSE OUTLINE & GRADING RATIONALE**  
(Proposed 3/98, revised 11/98, 5/99, 12/99, 8/2000. 1/2001. 1/03, 8/04, 8/05, 8/07)

<b>Professor:</b>	Robert I. Ho <a href="mailto:rho@mtsac.edu">rho@mtsac.edu</a>	<b>Semester:</b> _____ 20__
		(909) 594-5611 x3908
<b>Course Name:</b>	<b>Architectural CAD Elements</b>	3 Units
<b>Reference No:</b>	(varies)	<b>Day and Time:</b> _____ - _____
<b>Prefix:</b>	<b>ARCH 18</b> (formerly CADD 30)	<b>Building/Classroom:</b> 28B-_____

**Texts:**

1. AutoCAD Architecture 2008, A Comprehensive Tutorial, Goldberg (Prentice Hall), 2008 (ISBN-13: 978-0-13-159227-8), or Autodesk Architectural Desktop 2007, A Comprehensive Tutorial, Goldberg (Prentice Hall), 2007 (ISBN 0-13-243432-6), or latest edition.
2. Introducing and Implementing REVIT ARCHITECTURE 2008, Fox/Balding, (ISBN-13:978-1-4283-1944-8) or Mastering Autodesk Revit Building, Aubin (ISBN-13: 978-1-4180-2053-8) or latest editions, both Thomson Delmar Learning.
3. Mastering Autodesk Architectural Desktop 2007, Aubin, (ISBN-13:978-1-4180-4908-9) Thomson Delmar Learning, or latest edition.

**Advisory Prerequisite:** ARCH 11 and ARCH 16, or equivalent experience.

**Course Description:** Intermediate CAD (Computer Aided Design and Drafting) specifically for architectural design and production. Portfolio of 2-D drawings and 3-D CAD models will be produced.

**Required Materials:** Notebook, 3.5" HD disks, 100/250 MB Zip or preferably 1 Gig Jump Drive and misc. supplies.

**Methods of Evaluation:**

Professionalism, attendance/participation/progress	20%
Tests and/or Lab. Assignments	40%
Portfolio (Lab Final)	20%
Final Exam	<u>20%</u>
	100%

**Attendance Policy:**

Regular attendance and participation are essential. Absences and late assignments will affect grades. Unexcused or excessive absences may result in the student being dropped from class. Please communicate special needs with the professor.

<b>Grading:</b>	<u>Percent</u>	<u>Grade</u>
	90%	A
	80%	B or better
	70%	C or better
	55%	D or better
	Below 55%	F

## ARCH 18 - TOPICAL OUTLINE (Theory/Lab):

(Revised 3/98, 5/99, 2005 to 16 week format - may be adjusted to reflect current software updates and advances.)

Current software used: ACAD (AutoCAD) 2008, ACD-A-2008 (AutoCAD Architecture) and Revit Architecture 2008  
TP=Title/Prototype

Model	Topic or Class Activity	Assigned (software)	Assignment Due
1	Orientation and review basic CAD skills/current software	.	
Lab	Hands-on operation and manipulation (Block/ATT)	TP 1	
2	Review 2D/3D views, Viewports, Layouts, MS/PS		
Lab	Draw/design prototype title in large sheet layout	TP 2	TP1
3	Continue Layouts, 2D/3D views and large plotting		
Lab	Use prototype titles and set 2D/3D viewports in layouts	Project-1	TP2
4	Overview of current architectural CAD software (such as Architectural Desktop)	(ACAD)	
Lab	Plot in 2D and 3D of simple architectural massing model		Project- 1
5	2D/3D architectural Walls and Object Properties		
Lab	Refine project 1 plots and create project 2 building walls	Project- 2	
6	2D/3D Doors/Windows/ annotations	(ACD-A)	
Lab	Install doors/ windows in building (continue project 2)		Project-1R
7	2D/3D Roofs and architectural dimensions		
Lab	Create 2D/3D roofs and dimensions (continue project 2)		
8	Architectural Symbols (Fixtures / Furniture)		
Lab	Use architectural 2D/3D symbols in building		Project- 2
9	Display for Architectural Design Presentation / Design Development (DD) vs. detailed working drawings (WD).		
Lab	Apply / refine layout displays for "Design" vs "DD"	Project- 3	
10	Object displays and Layer controls	(Revit)	
Lab	Use/start architectural elements in final project (3)		Project- 2R
11	Special elements such as stairways and railings		
Lab	Continue creation of 2D/3D building project (3 )		
12	2D/3D sections		
Lab	Add 2D/3D sections in building project (3)	Portfolio	Project- 3
13	Preview of Arch 26 (Documentation, details /schedules)		
Lab	Plotting final project (3) review set.		
14	Preview of Arch 28 (Arch Illustrations and Animation)		
Lab	Revise final project CAD model and reprint final project		Project- 3R
15	Course review.		
Lab	Completion of portfolio		Portfolio
16	Final exam		

## **ARCH 18**

### **Measurable Course Objectives:**

The student will:

1. Use common CAD software and architectural add-ons for simple architectural (and interior) 2-D and 3-D drawing applications.
2. Use common and architectural software for 3-D computer simulated model. (both interior and exterior).
3. Produce a portfolio reflecting entry-level job skills in architectural CAD.
4. Use common and architectural software for design.
5. Use common and architectural software for simple working drawings.

### **Sample Assignments:**

1. Prototype drawing and title-block – After review and demo, design and create an architectural drawing prototype with professional title block, logo with attributes for future building projects.
2. Project 1- After review and demo, design, create and print in proper scale a 3-D architectural mass model of a down-town office plaza using current architectural software.
3. Project 2- After demo and instructions, create and print in proper scale a 3-D simple building with all necessary design drawings using current architectural software.

[ARCH CAD ELEMENTS-103431 > ASSIGNMENTS](#)[EDIT VIEW](#)

## Assignments



### T-1 Assignment = Arch18-Title1a

#### T-1 Assignment = Arch18-Title Blocks for All Future Projects

You need to design/create 2 title blocks with necessary identification information (per class discussions) and attributes. The dimensions of the title blocks are:

For 11"x17" paper (within 2" x 9.5" area, 3/4" from paper edges at the top, right and bottom) and

For 24"x36" paper (within 2" x 22.5" area, 3/4" from paper edges at the top, right and bottom)

You may use the Arch18-Title1a link above for example video of setting attributes only (different dimensions)

Print the small title block ASAP when you are done.



### Arch18-Project-1a

Arch 18-Project-1

You are to create a 3D massing model on an imaginary downtown city block of 400" x 600' in size. (The above video and the next few videos in the series are examples) Per class discussions and example physical models in the glass display case, you should make the model 3 dimensionally and architecturally interesting in form.

We will have the class vote on your final printed versions of your project for the top 3 honors. The selected models will be 3D printed using our RP machines.

The printed project-1 shall include the following views: Top (site plan), Front, Right and/or Left, Isometric and minimum 2 perspective views on 11 x 17" paper (with your Title Block designed under Project-1a). All orthographic views to have 1"=100' scale.

Project-1 printed sheets are due Monday 9/24/07 @ 9:30 pm. A copy of your file shall be saved by the due date/time as: "**Arch18-Project-1-Your-Name**" in my folder below:

"X:\R\_HoHo-demo-Arch18-2007-8\Arch18-Project-1-Plaza-2007-9-24"



### Arch18-Project-1b

Some refinements to example Project-1a



### Arch18-Project-1c

More refinements to example project-1a



### Arch18-Project-1d

More refinements still to Project 1

**Arch18-Project-1e****Project 2 - Simple Tract Home - Assigned 9/24/07**

Per hand-out example given in class and class demos (some yet to come in future weeks), create a design/design development set of drawings of a simple tract home.

Required drawings:

- Site Plan and Roof Plan - use appropriate recognised scale(s).
- Design Floor Plan (with furniture) - use commonly accepted scale no less than 1/8" = 1'-0'
- Design Development Floor Plan (with all dimensions) - use same scale as the above.
- Elevations (all 4 sides) - must be in same scale as the floor plans above.
- Pictorial Drawings to include isometric, exterior eye-level perspective, exterior bird's-eye perspective and interior perspective(s) (minimum one each)
- Building Section (one 2D section, and one 3D section-perspective).
- All drawings should be on standard size paper (11" x 17" or 24" x 36") with your custom-designed title block (as specified in class) of course.

Due Date:

- A progress print (floor plans at least) is due 2 weeks from the assignment date of 9/24/07 (i.e. 10/8/07).
- The complete printed set is due 4 weeks from the assignment date of 9/24/07 (i.e. 10/22/07 - 9:30 pm).
- Save your project-2 file(s) as "**Arch18-Project-2-Your-Name-2007-10-22**" in my folder below:  
"X:\R\_Ho\Ho-demo-Arch18-2007-8\Arch18-Project-2-**House-2007-10-22**"
- Complete set submitted on time will get one chance for revision/correction/improvement of grades.

**Arch18-Project-2a video**

This is a video of class demo for Project 2

**Arch18-Project-2b video**

These are additional video demos of Project-2

**Arch18-Project-2c-roof video**

These are additional video demos of Project-2

**Arch18-Project-2-DD video**

These are additional video demos of Project-2

**Arch18-Project-2d-elev video**

These are additional video demos of Project-2

**Arch18-Project-2d-pictorial video**



These are additional video demos of Project-2



#### **Arch18-Project-2d-roof video**

These are additional video demos of Project-2



#### **Arch18-Project-2d-section video**

These are additional video demos of Project-2



#### **Arch18-Project-2e-roof video**

These are additional video demos of Project-2



#### **Arch18-Project-2-site-roof**



#### **Arch18-Project-2-site-roof-a**



#### **Arch18-Project-2-site-roof-b**



#### **Arch18-Project-2-fixtures**



#### **Arch 18-Project-2-garage-slab**



#### **Project 3 - Final Project -Assigned 10/24/07**

Arch18-Final Project.doc (47 Kb)

#### **Arch 18 – Project 3 (Final Project)**

Building of Your Choice (with discussion and approval of faculty by next class)

Based on your experience from Project 1 and 2, while you are still refining and making corrections to Project 2, you are to select a more complicated building for your Final Project. You may use a building of your own design (say from your design class) or a famous architect's building design. The project may be single or multi-story. If the building you selected is very large and/or complicated, please talk to me about a possible team project. The purpose of the final project is to use the CAD or BIM software to put a building together in a 3D "Building Model" for design presentation and DD (design development) and a "bases" for a more complete WD (working drawings) set to be completed in the next course Arch 26 (Architectural CAD Working Drawings).

The drawings required are similar to the Project 2, except the drawing file(s) or rather "building model" file(s) are more complicated and may be organized as a "project" with a

folder containing multiple x-refed files (as opposed to a single file/multiple layout small project).

**Due Dates and Time Management:**

Week	Date	Day	Activities	Notes
10	10/29/07	M	Project 3 - Project Selected and Decided	UON- all due time is 9:30 pm.
11	11/5/07	M	Building Model	
12	11/14/07	W	Send Progress Files to my folder	
13	11/21/07	M	Continue Project with Layouts or X-refs.	
14	11/26/07	M	Submit Final Project (File and Print)	
15	12/3/07	M	Portfolio (all 3 projects)	
16	12/10/07	M	Final Exam	

**Note: Weekly Progress checks with professor - Required every week.**

- The complete printed set is due 4 weeks from the assignment date of 10/29/07 (i.e. 11/26/07 - 9:30 pm). • Save your project-3 file(s) in a folder named as "**Arch18-Project-3-Your-Name-2007-11-26**" in my folder below: X:\R\_Ho\Ho-demo-Arch18-2007-8 \Arch18-Project-3-Final-2007-11-26"
- Complete set submitted on time (or earlier) **may** get one chance for revision/correction and possible improvement of grades if there is time before 12/3/07 portfolio due date. Please see attached file for further requirements.

**Project 3R (in Revit) - Final Project -Assigned 10/24/07**  
Arch18-Final Project.doc (47 Kb)

**Arch 18 – Project 3R (Final Project using Revit/BIM)**

Building of Your Choice (with discussion and approval of faculty by next class)

Based on your experience from Project 1 and 2, while you are still refining and making corrections to Project 2, you are to select a more complicated building for your Final Project. You may use a building of your own design (say from your design class) or a famous architect's building design. The project may be single or multi-story. If the building you selected is very large and/or complicated, please talk to me about a possible team project. The purpose of the final project is to use the CAD or BIM software to put a building together in a 3D "Building Model" for design presentation and DD (design development) and a "bases" for a more complete WD (working drawings) set to be completed in the next course Arch 26 (Architectural CAD Working Drawings).

The drawings required are similar to the Project 2, except the drawing file(s) or rather "building model" file(s) are more complicated and may be organized as a "project" with a folder containing multiple x-refed files (as opposed to a single file/multiple layout small project).

**Due Dates and Time Management:**

Week	Date	Day	Activities	Notes
10	10/29/07	M	Project 3 - Project Selected and	UON- all due time is 9:30 pm.

			Decided
11	11/5/07	M	Building Model
12	11/14/07	W	Send Progress Files to my folder
13	11/21/07	M	Continue Project with Layouts or X-refs.
14	11/26/07	M	Submit Final Project (File and Print)
15	12/3/07	M	Portfolio (all 3 projects)
16	12/10/07	M	Final Exam

**Note: Weekly Progress checks with professor - Required every week.**

- The complete printed set is due 4 weeks from the assignment date of 10/29/07 (i.e. 11/26/07 - 9:30 pm). • Save your project-3 file(s) in a folder named as "**Arch18-Project-3-Your-Name-2007-11-26**" in my folder below: X:\R\_Ho\Ho-demo-Arch18-2007-8\Arch18-Project-3-Final-2007-11-26"
- Complete set submitted on time (or earlier) **may** get one chance for revision/correction and possible improvement of grades if there is time before 12/3/07 portfolio due date. Please see attached file for further requirements.



**Project 3R - Revit Project-A1-1-start**

As supplement to class lecture/demo, the following series of demo videos on Revit will help you create your first revit building.



**Project 3R - Revit Project-A1-2-Levels**



**Project 3R - Revit Project-A1-3-Foundation+Topo**



**Project 3R - Revit Project-A1-4-Walls**



**Project 3R - Revit Project-A1-5-Roof**



**Project 3R - Revit Project-A1-6-Floors**



**Project 3R - Revit Project-A1-7-Wall-interior**



**Project 3R - Revit Project-A1-8-Doors**



[Project 3R - Revit Project-A1-9-Windows](#)



[Project 3R - Revit Project-A1-10-Curtain-Wall](#)



[Project 3R - Ho-Revit-Camera-Perspective-1](#)

#### Review opportunities



Don't be too scared by the number of assignments. These are video recordings available for you to review and refresh what you may (or may not) have learned from previous courses. Please use them if you need them at your convenience.

New assignments and video recordings will be added to assist your learning. Hope they will help.



[back-ground-color](#)



[A-2d-ATT](#)



[A-2d-ATT-2](#)



#### **A-7a**

Any video demo links numbered after A-3, (such as A-7a) are included only as refresher or as review for previous course (Arch 16) for your reference in case you need them.



[A-7b](#)



[A-7c-camera](#)



[A-8a](#)



[A-8b](#)



**A-8c**



**A-8d-screed**



**A-8e-roof-slope**



**A8-4**

This is another version of older A8 video re-release for your reference.

 Mark Reviewed



**Arch16-A8-5-hatch**



**Extra Credit-1(for Arch 16 only)**



**Extra Credit-2 (for Arch 16 only)**

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ARCH.CAD.ELEMENTS-103431 > INSTRUCTOR



**Prof. Robert Ho**

**Email** [rho@mtsac.edu](mailto:rho@mtsac.edu)

**Work Phone** 909-594-5611 x3908

**Office Location** Technology Building (28-B)  
Room 304-B

**Office Hours** No office hour during Winter and summer sessions - but will normally be in the office early before class starts.  
Please see current office hour posted at the office.



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-  Detail View

DESIGN II ARCH DESIGN-105927 > ANNOUNCEMENTS

The Louvre and Pyramid Entrance



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 [VIEW LAST 30 DAYS](#) | 
 [VIEW ALL](#)

**August 18, 2007 - August 25, 2007**



**Fri, Aug 24, 2007 -- Welcome**

Posted by: Blackboard Administrator

Welcome to Arch 21 = Digne II - Architectural Design

This is the course supplement through Blackboard. Course outline and assignments may be downloaded and printed.

You may also watch additional supplemental videos over the internet as we add more content. Hope this helps. If you come across good web-sites related to good architecture and design, please let me know. So we can share with others by adding a web-link.

Now go to "assignment" and see if there is anything assigned.

DESIGN II ARCH DESIGN-105927 > CONTROL PANEL > ASSIGNMENTS

## Assignments

Item
 Folder
 External Link
 Course Link
 Test
 Select: Learning Unit
 Go

1 **Assignment-1** [Modify](#) | [Manage](#) | [Copy](#) | [Remove](#)  
 Find out all you can (within the time available) about the design of the expanded Louvre (i.e. the building shown in the course banner), and be ready to present what you found and discuss/express your views of the design in a week.

2 **Assignment - 1P** [Modify](#) | [Manage](#) | [Copy](#) | [Remove](#)  
*Enabled: Statistics Tracking*  
 Bring in your design portfolio ASAP (i.e. next time you see me) from previous class(s) you took and/or your own work related to design. This will help me know you better.

If you don't have a portfolio or if you lost/throw away yours, make sure you start building one in this class and keep it updated/improved from now on. A portfolio is required before the end of the course and it will be very useful for interviews for transfers and for professional work.

3 **Assignment-Arch** [Modify](#) | [Manage](#) | [Copy](#) | [Remove](#)  
*Enabled: Statistics Tracking*  
 Since the great majority (94%) of the class polled indicated the desire to become an architect someday, here is an assignment that you can use:

Write a one page exesecutive summary for yourself (and submit by next Wed. Sep. 5, 2007 (all assignments are due at the beginning of class, unless otherwise specified) on the "Requirements to become a licensed architect (assume that is what you want to be) where you live.

- You may use a table or bullet format to clarify the catagories of requirements for easy reading.
- Include a column (or an item) in terms of what it takes/how long you estimate will take YOU to accomplish each and the over-all requirements.
- State the source(s) of your information (if you used the web, show the URL).

4 **Design Project-1(suggestions)** [Modify](#) | [Manage](#) | [Copy](#) | [Remove](#)  
*Enabled: Statistics Tracking*  
[Arch 21-office.doc](#) (25.5 Kb)

We will try to do as many architectural design projects as the time will allow us. But we will do at least 2 building designs before the semester is over.

You may give some suggestions as to what building types you would like to do. We may do a house, a more affordable townhouse/condo unit in a PUD, or an office, etc.

I am attaching a file of the requirements of one project for your reference and consideration. Please open the file, read, and think over. Be ready to discuss

next week.

5 **Assignment- Mini-1**  
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As we talk about Green Design, the subject of car vs. bicycle came up.

Make a skech and figure out how many bike parking = one regular car parking.

- Note make sure you consider the amount of space needed to get the car/bike in and out of the parking space.

6 **RRR-1 = Restaurant Research Report**  
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Since our class decided to do two design projects:

- 1) House (Requirements to come)
- 2) Restaurant - Independently operated Seafood-Steak House in LA County

You are required to visit some similar restaurant and do a Restauant Research Report (RRR-1 due 9/19/2007) to share with the class, the report may include:

- Pictures (inside and out)
- sketched layout(s) of floor plan and site plan - include number of tables/booth
- interview with the manager(s) and examples of menu
- examples from Time Saver Standards and/or other sources.
- suggested site(s),

7 **Assignment - Arch-2 (Revised)**  
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Congratulations to those who turned in "Assignment Arch" on time (9/5/07) (9 of you did) and those better-late-than-never (9/10/07).

However, information included / sources quoted are either incomplete or often inaccurate.

Per class discussssion/suggestions of web sources such as

CAB [http://www.cab.ca.gov/pdf/candidates\\_handbook.pdf](http://www.cab.ca.gov/pdf/candidates_handbook.pdf)

and key words such as: California, Architect, ARE , NCARB, etc. you should be able to get very accurate information easily and revise an accurate one page summarize again as "Assignment Arch-2 (Revised) by next week 9/17/07 3:35 pm

8 **Design Project-1 (Single Family House)**  
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[Architectural Design Project I - House.doc](#) (36.5 Kb)

**Architectural Design Project-1 (Single Family**

**House)** Prof. Robert Ho

A client family came to your boss to design a house at the site given below. Since you are such a promising future architectural designer, you are assigned to be the project designer for this client. Your boss requires you to show weekly progress of your work and the client expects to see your design presentations noted below (see attached file for further details.)

(Prof. Ho will act as the client as well as your supervising architect in the architectural firm). Your future pay-raises, continued employment (and your grade) depend on your timely design and presentations. We look forward to seeing your promising designs. ☺

Preliminary presentation due date: Monday 10/8/07 changed to Wed 10/10/07 @ 3:45 pm due to Prof. Ho's absence (at an official conference last Wed 10/3/07). The required drawings (on paper) and any computer files need to be in the professor's hands for full credit. Computer files need to be copied to:

X:\R\_Ho\Ho-Arch21-2007-8\Ho-Arch21-House-Prelim-2007-10-10

Although "Better Something than Nothing" and "Better Late than Never", please note any item not received by the due date/time may be discounted heavily. Always do the best you can within the time-frame available.

Just a reminder, that the 6th week due-date (10/29/2007 Monday @ 3:45 pm) for the final presentation is quickly approaching. Per discussions of the preliminary designs and examples shown on 10/17/07, make sure your final design presentations are printed on identical sheets of paper/board (size, orientation and format) using appropriate scales are specified. Your final design should incorporate the best features (maximize pros and minimize cons from the 3 alternatives) and respond to the program requirements and good architectural principles (such as energy efficiency, green design, etc.)

The required drawings (on paper) and any computer files need to be in the professor's hands for full credit. Computer files need to be copied to:

X:\R\_Ho\Ho-Arch21-2007-8\Ho-Arch21-House-Final-2007-10-29

**9 Design Project-2**

Enabled: Statistics Tracking  
Arch 21-Restaurant.doc (40.5 Kb)

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**Arch 21 – Architectural Design Project - Restaurant**

**Problem Statement:** Imagine you as the young architectural intern working for an architectural firm. The firm just signed the commission to design a local restaurant (Steak and Seafood). To discover young talent, promote good design and to encourage the design participation of the interns, the architect and the client agreed to open the preliminary design to everyone in the office as an in-house design competition. The winner of the competition gets the official recognition, the opportunity to have his/her design developed into the final actual design of the project and a bonus (2 free dinners after the restaurant opens for business – or, if you are a student, up to 3% toward final course grade). Your design will not be considered if it is not submitted on time (4 actual working weeks will be allowed after the opening of the competition.)

Please open the attached file for more project requirements in addition

to the due dates noted below:

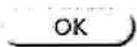
**Due Dates and Time Management:**

Week	Date	Day	Activities	Notes
10	10/29/07	M	Project 2 - Assigned	
11	11/5/07	M	Programmatic decisions Preliminary Site Plan	<u>UON- all due time is 10 min. after class starts</u>
12	11/14/07	W	Preliminary Presentation	2 weeks after assigned date
14	11/26/07	M	Final Presentation Due	4 weeks after assigned date
15	12/3/07	M	Portfolio (all design projects)	One week before final.

**Note: Weekly Progress checks with professor - Required every week.**  
The required drawings (on paper) and any computer files need to be in the professor's hands for full credit. Computer files need to be copied to:

X:\R\_Ho\Ho-Arch21-2007-8\Ho-Arch21-Restaurant-Prelim-2007-11-14

X:\R\_Ho\Ho-Arch21-2007-8\Ho-Arch21-Restaurant-Final-2007-11-26



**MT. SAN ANTONIO COLLEGE**  
**Department of Architecture & Design**

**Architectural Technology**

**ARCH 21 – Design II –  
Architectural Design**

**Formerly**

**ARCH 21 - Architectural Design**

**Professor Robert I. Ho, Architect**

ARCH-TECH 2000-II\ARCH 21-2L9905-as approved-01  
Revised: 3/30/1998, 5/20/98, 12/04/98, 5/99, Arch 21- as approved-2007  
Curriculum approval 5/99 for Fall 2000, printed 7/2001, 6/2006  
Textbook updated 8/03, 8/04

**MT. SAN ANTONIO COLLEGE**  
**COURSE OUTLINE & GRADING RATIONALE**  
(Proposed 3/98, revised 5/98, 12/98, 8/07) printed 7/2001, 8/03, 8/07

Semester: \_\_\_\_\_ 20\_\_

Professor: Robert I. Ho rho@mtsac.edu (909) 594-5611 x 3908

Course Name: Design II - Architectural Design 3 Units  
(Formerly Architectural Design)

Reference No: (varies) Day and Time: \_\_\_\_\_ - \_\_\_\_\_

Prefix: ARCH 21 Building/Classroom: 28B-\_\_\_\_\_

**Text(s) / References:**

1. **Graphic Thinking for Architects & Designers**, Laseau, Wiley (0471-44590-8); **Architectural Graphics**, Ching, Wiley (0-471-09066); **Designing with Models**, Mills, Wiley (0-471-44590-8 or 0-471-34589-X) **Architecture: Form, Space & Order**, Ching, Van Nostrand Reinhold (ISBN 0-442-21535-5), **Notes on Architecture**, Kaufman
2. **A Whack on the Side of the Head (How You Can Be More Creative)**, von Oech, Warner Books 0-446-67455-9
3. Other references: **Architectural Graphic Standards**, AIA (Any recent edition); **Time-Saver Standards** (Any recent edition); **Architecture and Allied Design** - - An Environmental Design Perspective. 2<sup>nd</sup> Edition (or latest edition available), by Anthony Antoniades, Kendall/Hunt Publishing Co. (ISBN # 0-8403-3919-4)

**Advisory Prerequisite:** ARCH 10, ARCH 11, ARCH 13 (or equivalent experience).

**Course Description:** Application of methods and theory used in architectural design projects. Includes graphic technique, design process, site analysis, presentation drawings and construction principles. Portfolio will be produced.

**Required Materials:** Notebook, portfolio, misc. drafting supplies (vellum pad/sheets, tracing paper, scales, pens, pencils, triangles, etc.). Access to camera and computer design/modeling software may be beneficial but not required (Computer with many software available on floor.).

**Methods of Evaluation:**

Assignments & Professionalism	20%
Design Project	30%
Portfolio / journal	20%
Final Project / Exam	30%
	100%

**Attendance Policy:** Regular attendance and participation are essential. Absences and late assignments will affect grades. Unexcused or excessive absences may result in the student being dropped from class. Please communicate special needs with the professor.

Grading:	<u>Percent</u>	<u>Grade</u>
	90%	A
	80%	B or better
	70%	C or better
	55%	D or better
	Below 55%	F

As approved 6/06, updated 8/07

## ARCH 21 - TOPICAL OUTLINE

(Revised 12/98, 5/99, 6/06, 8/07 - May be adjusted to suit design projects.)

### Course Outline: (Module – Topic or Class Activity)

- Course orientation, tools and equipment; design graphics and conventions
- Site consideration, legal constraints, client programming design process
- Design process: problem statement, research, analysis, synthesis and solution, schematic design presentation
- Final project presentation format
- Design process: problem statement, research, analysis, synthesis and solution, schematic design presentation
- Final project presentation format
- Final portfolio preparation

### Assignment Due

- Project 1
- Project 2

### Lab Outline:

- Graphic symbol graphics and lettering
- Develop client program, code search, site analysis for sample project
- From given problem statement develop design process for residential project
- Final presentation development
- From given problem statement develop design process for commercial project
- Final presentation development

- Project 1
- Project 2

### Measurable Course Objectives:

The student will:

1. Apply the design process to create small building design(s).
2. Present and evaluate designs using design drawings, 3-D models and verbal presentations.
3. Demonstrate professional values and practices.
4. Produce a portfolio reflecting building design skills.
5. Apply design principles, knowledge of codes, and construction materials/methods to building design.

### Sample Assignments:

1. From a selected site, develop graphic site analysis, utilizing legal, environmental, man-made and topographical elements.
2. Prepare design graphic symbols and lettering from approved reference materials.
3. Residential design project: from given problem statement, design a vacation home from selected site. Design shall be based on client design and site parameters.

As approved 6/06, updated 8/07

CAD 3-D ILLUSTR/ANIMATION-103435 &gt; ANNOUNCEMENTS



VIEW TODAY

VIEW LAST 7 DAYS

VIEW LAST 30 DAYS

VIEW ALL

## All Announcements

-  **Thu, Dec 20, 2007 -- *Student access to Fall 2007 courses*** Posted by: Dwight Ayle  
 Students who are currently enrolled in Fall 2007 courses may continue to access their Blackboard courses until December 31, 2007. By administrative policy, student enrollments are available for 2 weeks following the end of each semester and intersession.
-  **Fri, Dec 07, 2007 -- *Server update to version 7.3*** Posted by: Dwight Ayle  
 An update of our current Blackboard Learning System has been scheduled for Thursday, January 3<sup>rd</sup>, 2008. This will begin at 9:00 AM and should be completed within 24 hours. During that time the Blackboard server will be unavailable.
-  **Sat, Oct 20, 2007 -- *Final Project Requirements*** Posted by: ROBERT HO  
 Please check the assignment area for Final Project requirements ASAP for weekly due dates.
-  **Sat, Sep 22, 2007 -- *Please Check "Assignment" for Prject 1M required by 9/29/07*** Posted by: ROBERT HO  
 Please also check "Announcement" area for whether there is a class on Sat 10/6/07.

**Fri, Aug 24, 2007 -- Welcome to Arch 28 - CAD 3-D Illustration / Animation**Posted by: Blackboard  
Administrator

Welcome to the course supplement through Blackboard. Course outline may be downloaded and printed. Assignment demo videos may be viewed by clicking on the links under "Assignments". New demo videos will be added as the course progresses. Hope these will help. If you come across good web-sites related to CAD Illustration / Animation, please let me know. So we can share with others by adding web-links.

Now please go to "assignments" and see if there is anything assigned.

**Wed, Jun 06, 2007 -- Welcome to Summer session 2007**Posted by: Blackboard  
Administrator

Welcome to Mt. SAC summer session.

I just returned from my sabbatical leave and am glad to be back on campus.

**Blackboard***Blackboard Academic Suite™ (7.1.391.0)**Blackboard Learning System™, Blackboard Community System™, Blackboard Content System™*

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Accessibility information can be found at <http://access.blackboard.com>.

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CAD 3-D ILLUSTR/ANIMATION-103435 > CONTROL PANEL > ASSIGNMENTS

## Assignments



Item



Folder



External Link



Course Link



Test



Select:

Learning Unit

Go



### 1 · Arch28-Demo

Enabled: Statistics Tracking

Modify

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Please click on the links below to view the 3 different versions (1, 1a and 1b) of the demo with different video file types.

Check the sizes of the files vs. the qualities of the videos. We will be figuring out how to create these virtual (fly around or walk through) videos in this course.



### 2 · Arch28-demo-1

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### 3 · Arch28-demo-1a

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### 4 · Arch28-demo-1b

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OK

 **Assignments** **Arch28-Demo**

Please click on the links below to view the 3 different versions (1, 1a and 1b) of the demo with different video file types.

Check the sizes of the files vs. the qualities of the videos. We will be figuring out how to create these virtual (fly around or walk through) videos in this course.

 **Arch28-demo-1** **Arch28-demo-1a** **Arch28-demo-1b** **Project 1 - 3D model + light & camera**

.. Per class demo and above example video(s) ..

Create your own plaza building complex using the 3d modeling software of your choice.

The plaza size shall be 400' x 600' x 20' (thickness for physical stability purpose only).

Save the 3d model scene file. Scene file is due 9/15/2007 (3:30 pm., UON).

Name your scene file "Arch28-Project1-your name" and save to drive X: inside "R\_Ho\Ho-demo-Arch 28-2007-8\PROJECT 1-Scene-9-15-07" folder.

Make sure you have at least one light and one camera. Render several good "camera view" renderings (jpeg files), and print one best rendering of you selection (max 8"x10", min 5"x7") for class competition. Top 3 selections by votes in the class gets an A and possible RP 3d output (physical model output for fun and pride).

Please note: black background in the rendering gets automatic F. Rendering file is due 9/22/07, at 3:30pm. . Name your rendering file "Arch28-Project1-your name" and save to drive X: inside "R\_Ho\Ho-demo-Arch 28-2007-8\PROJECT 1-jpeg-9-22-07" folder.

 **Project 1 - More examples from Prof. Ho** **Project 1 - More examples from Prof. Ho-3** **More example-(continued) -3a** **Sofa example of modifier stack-edit mesh**

This is a similar video-recording of the class-demo we did today 9-15-07 in class on modifier stack



and edit mesh.



### Project 1 M - 3D Model "Key-Frame" Video Movie File

Continue with the Project 1 above, you are now required to set-up a key-frame video of your plaza and animate the camera movement to simulate drive-around or fly-around as demoed in class. Preview it and then render the 100 frame movie. Make sure you save the video rendering as follows:

Name your rendered video file "Arch28-Project1-your name" and save to drive X: inside "R\_Ho\Ho-demo-Arch 28-2007-8\PROJECT 1 M-video-9-29-07" folder. (By 3:30 pm 9/29/07 of course.)



### Project 1 M - continue key-frame animation

continue key-frame camera animation example.



### Project 1 M - More example-camera2

This is an example of setting up a fly-around camera animation.



### Project 1 M - More example-camera2-Slow

Example of how to slow down the motion and lengthen the movie.



### material-demo



### material-brick (demo)

Example of making something to appear as made of bricks



### material-glass (demo)



### material-uvw-map (demo)

Example of how to assign/adjust map/scales of materials.



### Spline-demo



### Spline controlled camera - demo



### wall-door-window demo

**Final Project**

Since there will only be 6 weeks remaining

You are required to do a final project and submit your final portfolio by the last class meeting (12/8/2007)

1. Week 9 (10/27/07) - You need to decide what building project (3D building model) for your project. You may use your own design or a famous building. You need to have necessary information (such as dimensioned plans/elevations and other drawings) ready to produce the 3D model. You may create in any software available in our labs and import (if needed) to the renderer you want to use (Vix, Max or Sketch-up). You may also download available famous buildings, if approved by the faculty (give your intention, source and your planned input in the project immediately but by 10/27/07).
2. Week 10 (11/3/07) to Week 12 (11/17/07) - Produce and/or import your model, add materials lights and camera(s). Set preliminary animation sequence(s) by either key-frame or assigned spline-path. Submit a copy of your scene file and minimum of 3 good finished rendering files of your final project model to my folder "**Final Project- scene-jpg =11-17-07**" by Week 12 (3:30 pm of course).
3. Week 12 (11/17/07) - Form "class poster" team (3 member max each team) and design a class poster using your renderings and any available software (such as photoshop) to print a poster (minimum 18" x 24" full color) each team. The best poster team gets a special bonus. :-)
4. Week 12 (11/17/07) - You need to set-up walk-through/ fly-around animation in your scene file and do a "dressed-rehearsal" animation rendering before you leave the classroom on Sat. (Your project animation may take the whole week-end to render.) You may have to do several "skip-frame" animation renderings before you do the full-length "dressed-rehearsal". Make sure you are saving you video file to your secure folder. Send a copy of your file to my folder ASAP (the file should be dated no later than the following Monday 11/18/07).
5. Week 13 (11/24/07) - Happy Thanksgiving. No class.
6. Week 14 (12/1/07) - Review your "dressed-rehearsal" animation file and refine your scene file as needed. Do several "skip-frame" animation renderings during the class time and do a refined full-length animation rendering-2 before you go home.
7. Week 15 (12/8/07) - Your portfolio is due today. Submit your final scene file, best 3 jpeg files and prints of your jpegs (mimum 5x7 pictures on 8.5 x 11 paper), best video file (.avi and/or .mov) and the team posters to my folder "**Final Project- scene-jpg-video =12-8-07**". Please note, If your refined animation rendering-2 was not any good, you will not have enough time to do it on 12/8/07).
8. Week 16 (12/15/07) - Final exam (If you need your course grade early, send me an email) and happy holiday.

### Motion-control-a

Per class demo on 11/3/07, the above link is a video recording on "path-constrained" motion control.

The following videos in the series (a-e) are continuations including how to adjust speed and smoothing speed transitions on the path using "Curve Editor" (or "Track-View").

### Motion-control-b

### Motion-control-c

### Motion-control-d

**Motion-control-e****multi-sub-object-materials****Add Audio to Video Animation using Camtasia-1**

To the advanced students who wish to add music to your refined animation video:

This is the first part of how to use Camtasia (one licensed station available in each lab) to add audio to your animation video.

**Add Audio to Video Animation using Camtasia-2**

Part 2 of Adding Audio to Video

**Result of Adding Audio to Demo Video-small**

The resulting video with smaller file size and lower resolution.

**Result of Adding Audio to Demo Video-Large**

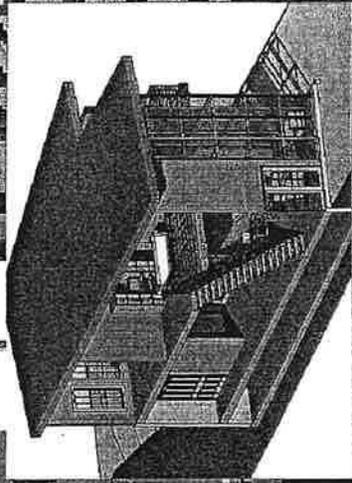
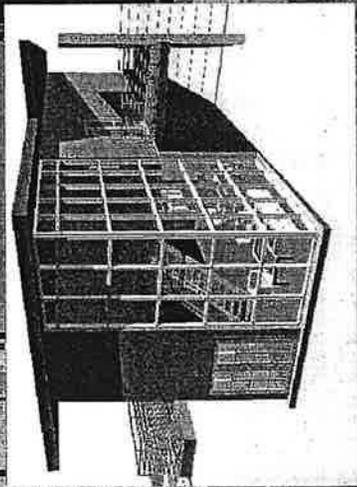
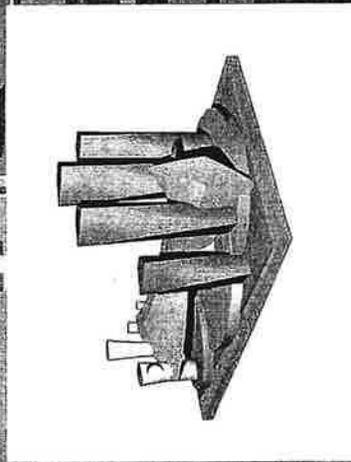
The result with slightly larger file size and better resolution.

## Appendix - E

### Copied Examples of Student Portfolios from Fall 2007 – Showing Actual Results of Incorporation of Revit/BIM Technology in Program:

- Arch 18 Portfolio of Jose Gomez – 28 pages showing Project 1 (using ACAD 2008), Project 2 (using ACD-A 2008) and Project 3 (using Revit-Architecture 2008) 28 pages
- Arch 28 Portfolio of Jose Gomez -5 pages of Illustrations of “Revit” building from Arch 18. (Student animation video is included in the attached VCD below) 5 pages
- Arch 28 Portfolio of Max Lang – 5 pages of Illustration of another “Revit” building. (Student animation video is also included in the attached VCD below) 5 pages
- Arch 21 Portfolio of Jean Pierre Cuba – 4 pages of Illustrations of Architectural Design Project 1 and 2 (using Revit-Architecture 2008 and 3ds Viz and Max). 4 pages

**JOSE ALEXANDER  
GOMEZ  
PORTFOLIO**



**ARCH 18  
FALL 2007  
Mt. San Antonio College**

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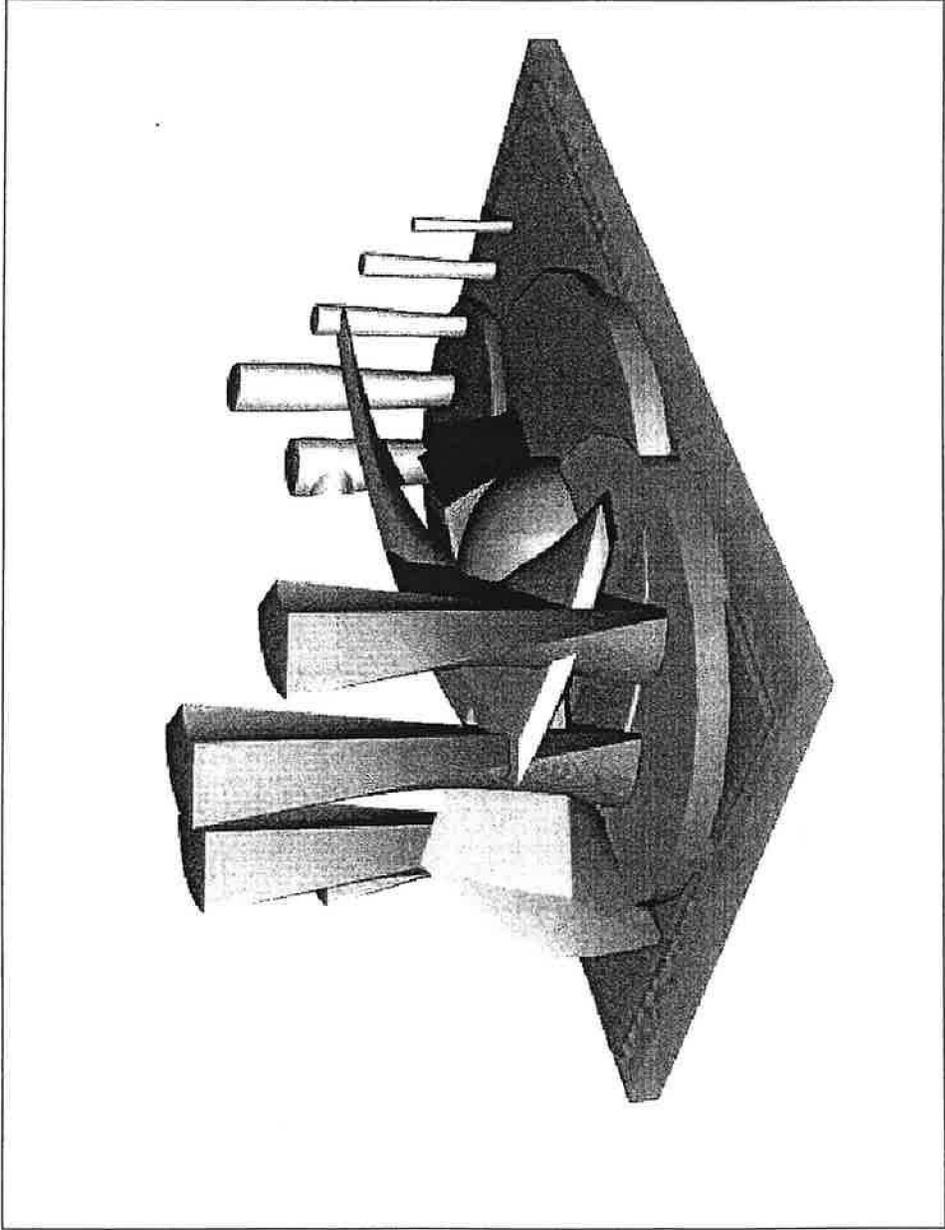
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  - A-2 of 2 Perspectives

- **PROJECT 2**

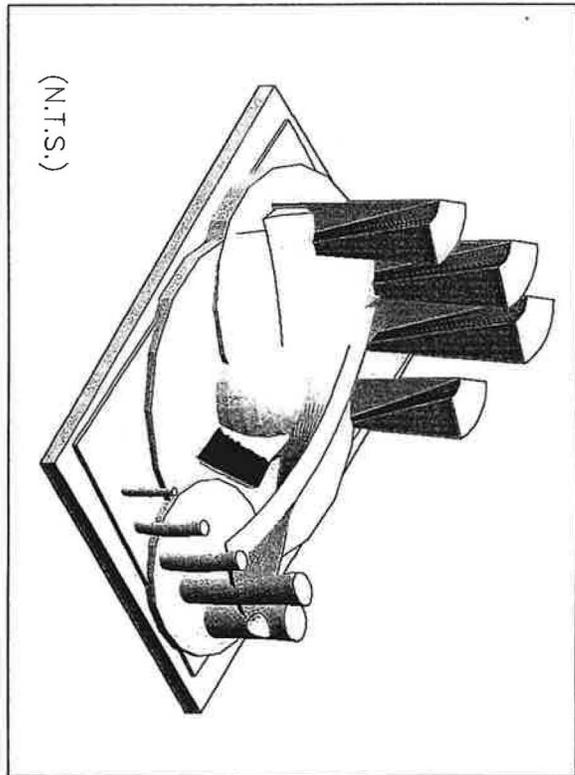
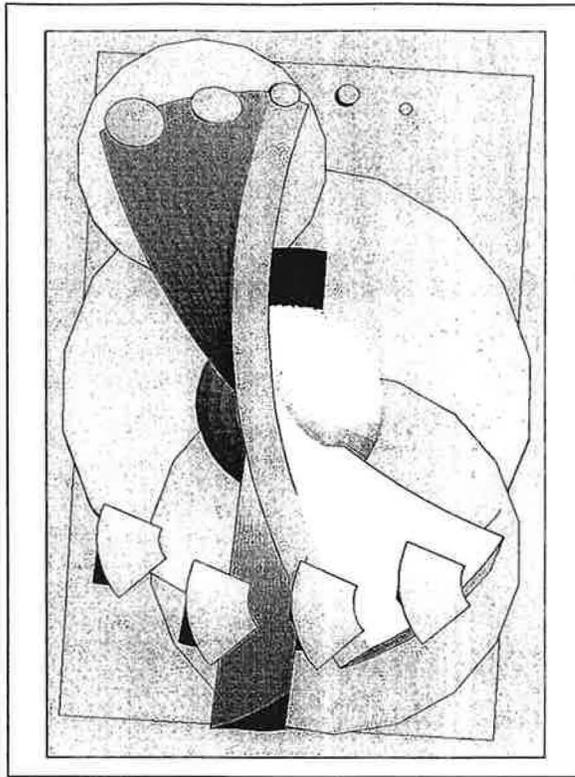
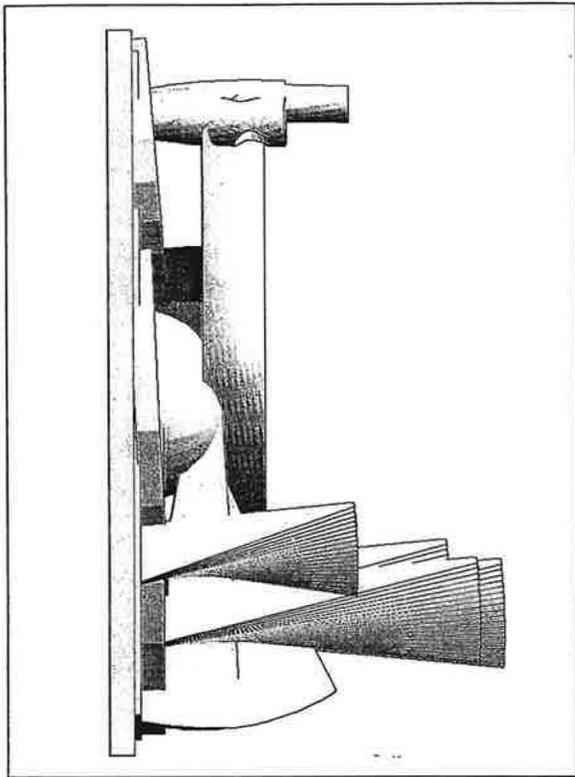
- A-1 of 9 Site Plan / Roof Plan
  - A-2 of 9 Floor Plan-Design Development
  - A-3 of 9 Floor Plan-Design
  - A-4 of 9 Elevations North-South
  - A-5 of 9 Elevations East-West
  - A-6 of 9 Isometrics
  - A-7 of 9 Interior Perspectives
  - A-8 of 9 Exterior Perspectives
  - A-9 of 9 Sections 2D-3D

- **PROJECT 3**

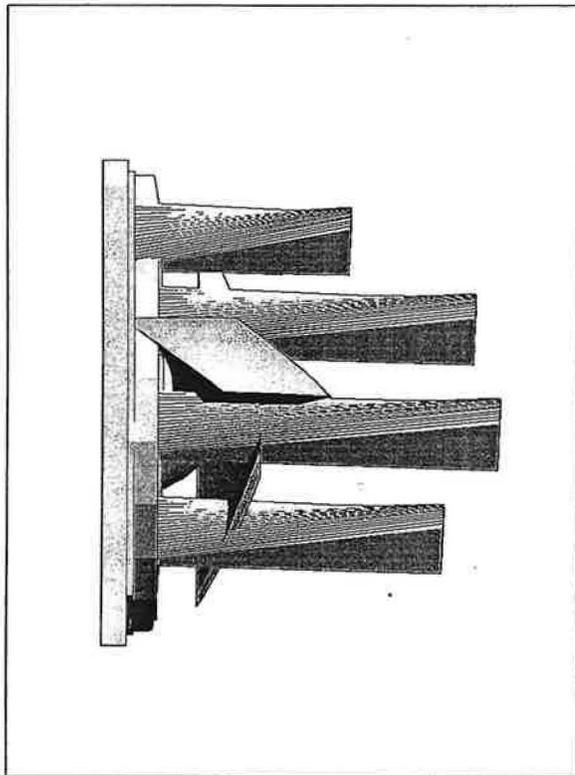
- A-1 of 11 Site Plan / Roof Plan
  - A-2 of 11 Lower Level-Design Development
  - A-3 of 11 Lower Level-Design
  - A-4 of 11 Entry Level-Design Development
  - A-5 of 11 Entry Level-Design
  - A-6 of 11 Elevations North-South
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  - A-8 of 11 Isometrics
  - A-9 of 11 Interior Perspectives
  - A-10 of 11 Exterior Perspectives
  - A-11 of 11 Sections 2D-3D
  - A101 Tutorial REVIT-Assignment



**PROJECT 1**  
**JOSE ALEXANDER GOMEZ**  
**ARCH 18**



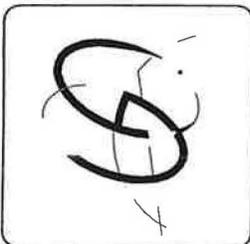
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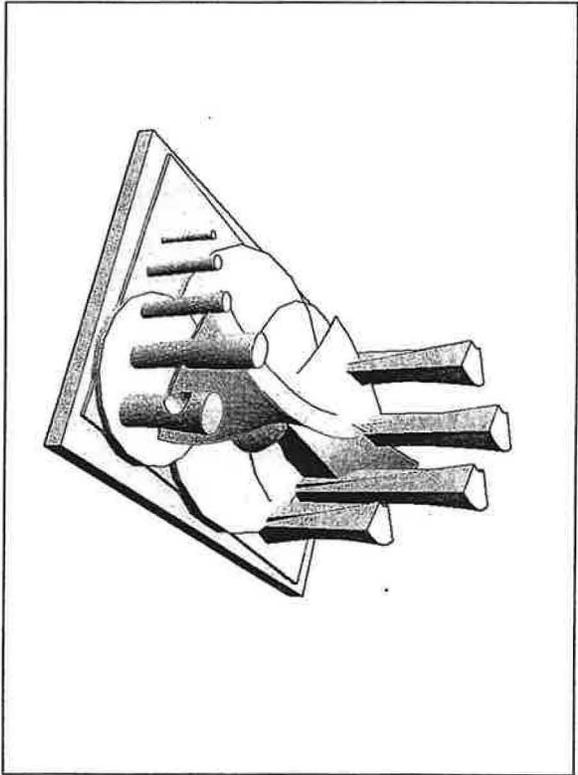
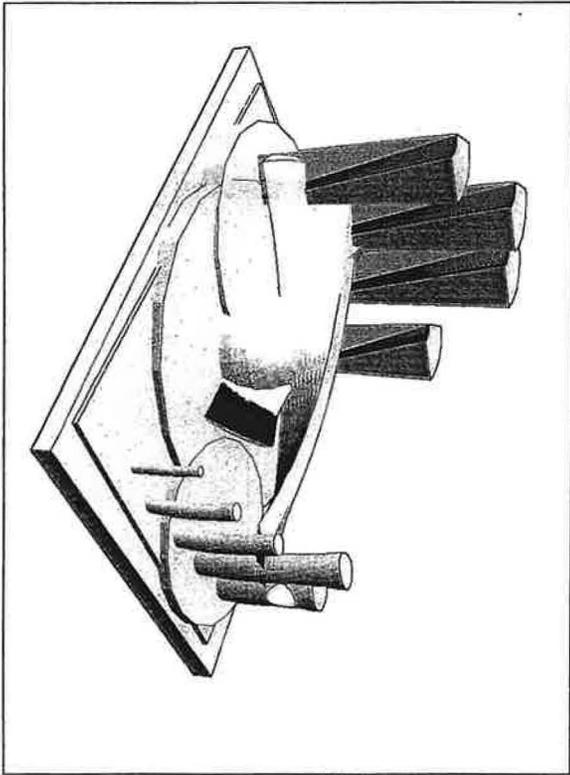
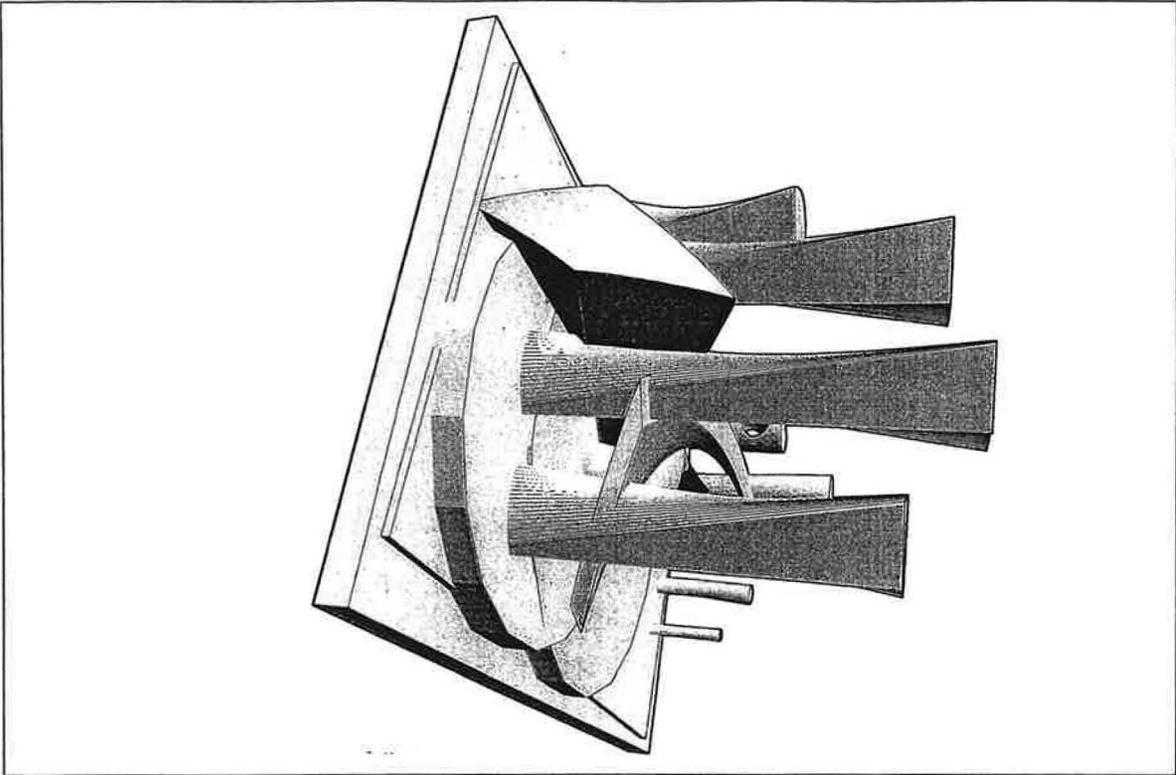


ISSUE DATE:	12-03-07
REVISION DATE:	10-22-07
SCALE:	1"=100'-0"
DRAWING NUMBER:	<b>A-1</b> OF-2

PROJECT NAME: <b>PROJECT ONE</b> Location: 1230 Main St. Chino, CA 91709
DRAWING TITLE: <b>ISO AND ORTHO VIEWS</b>
DRAWING BY: <b>JOSE ALEXANDER GOMEZ</b>

<b>NEW MILLENIUM ARCHITECTS</b>
1825 Rock River Rd Diamond Bar CA 91765
TEL: 909 -723 3959 www.newmilleniumarch.com





ISSUE DATE: 12-03-07  
 REVISION DATE: 10-22-07  
 SCALE: N/A  
 DRAWING NUMBER:  
**A-2**  
 OF-2

**PROJECT NAME:**  
**PROJECT ONE**  
 Location: 1230 Main St. Chino, CA 91709

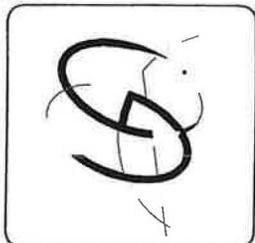
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**PERSPECTIVES**

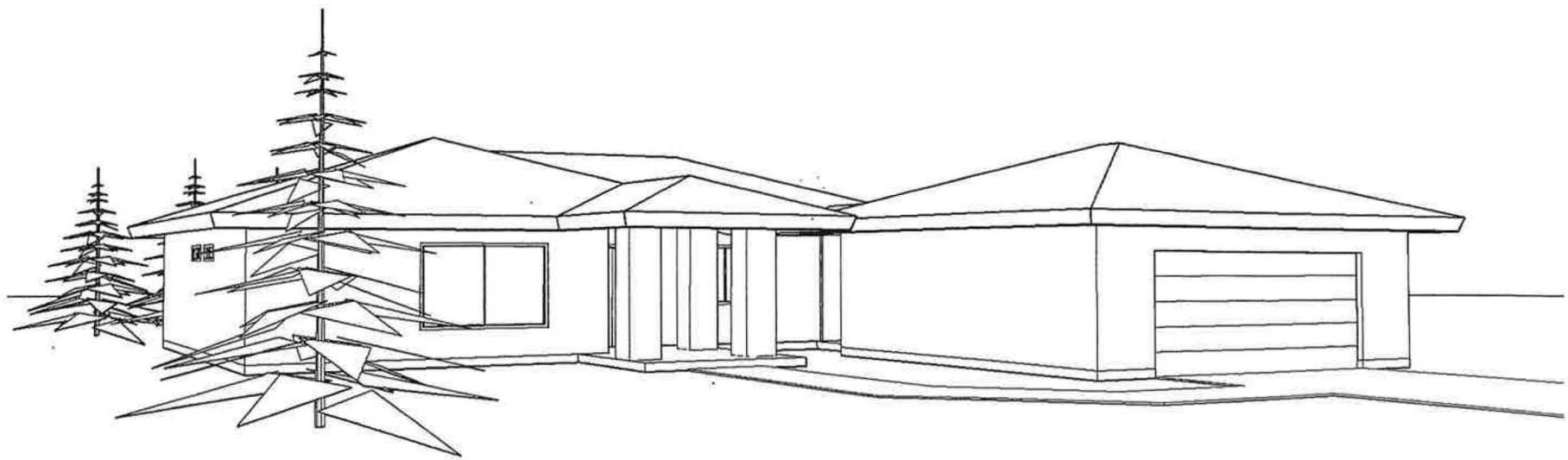
**DRAWING BY:**  
**JOSE ALEXANDER GOMEZ**

**NEW MILLENIUM ARCHITECTS**

1825 Rock River Rd Diamond  
 Bar CA 91765

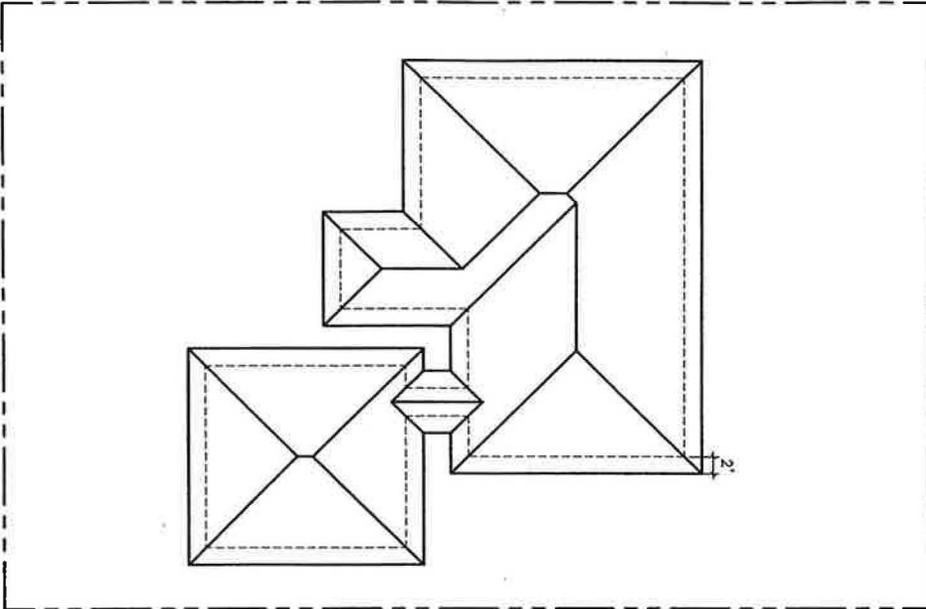
TEL: 909 -723 3959  
[www.newmilleniumarch.com](http://www.newmilleniumarch.com)



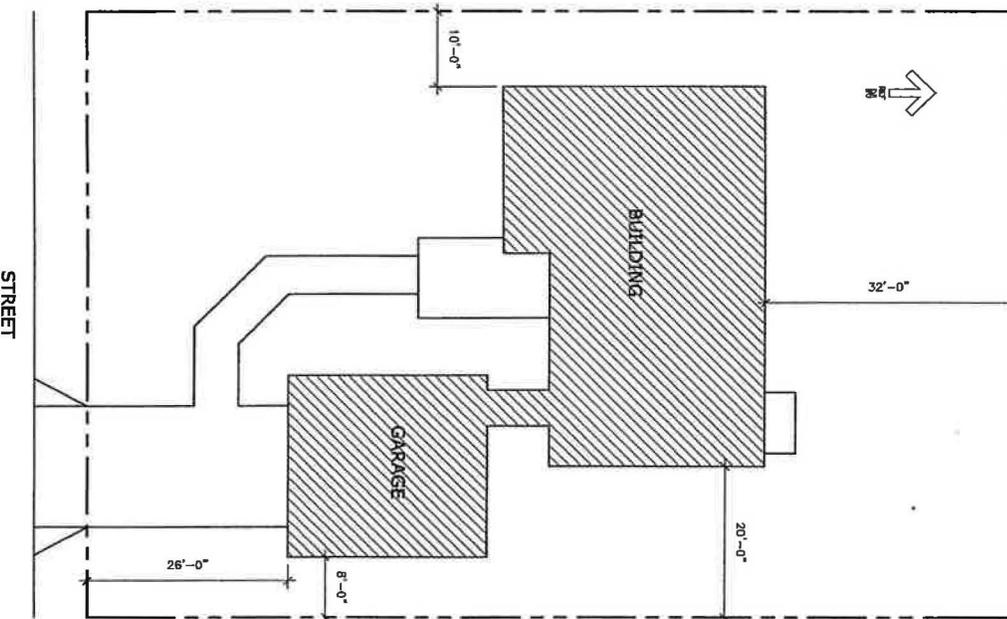


**PROJECT 2  
TRACT HOME  
ARCH 18**

# ROOF PLAN



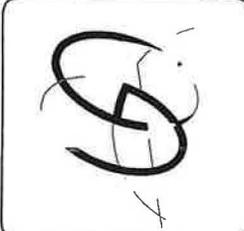
# SITE PLAN

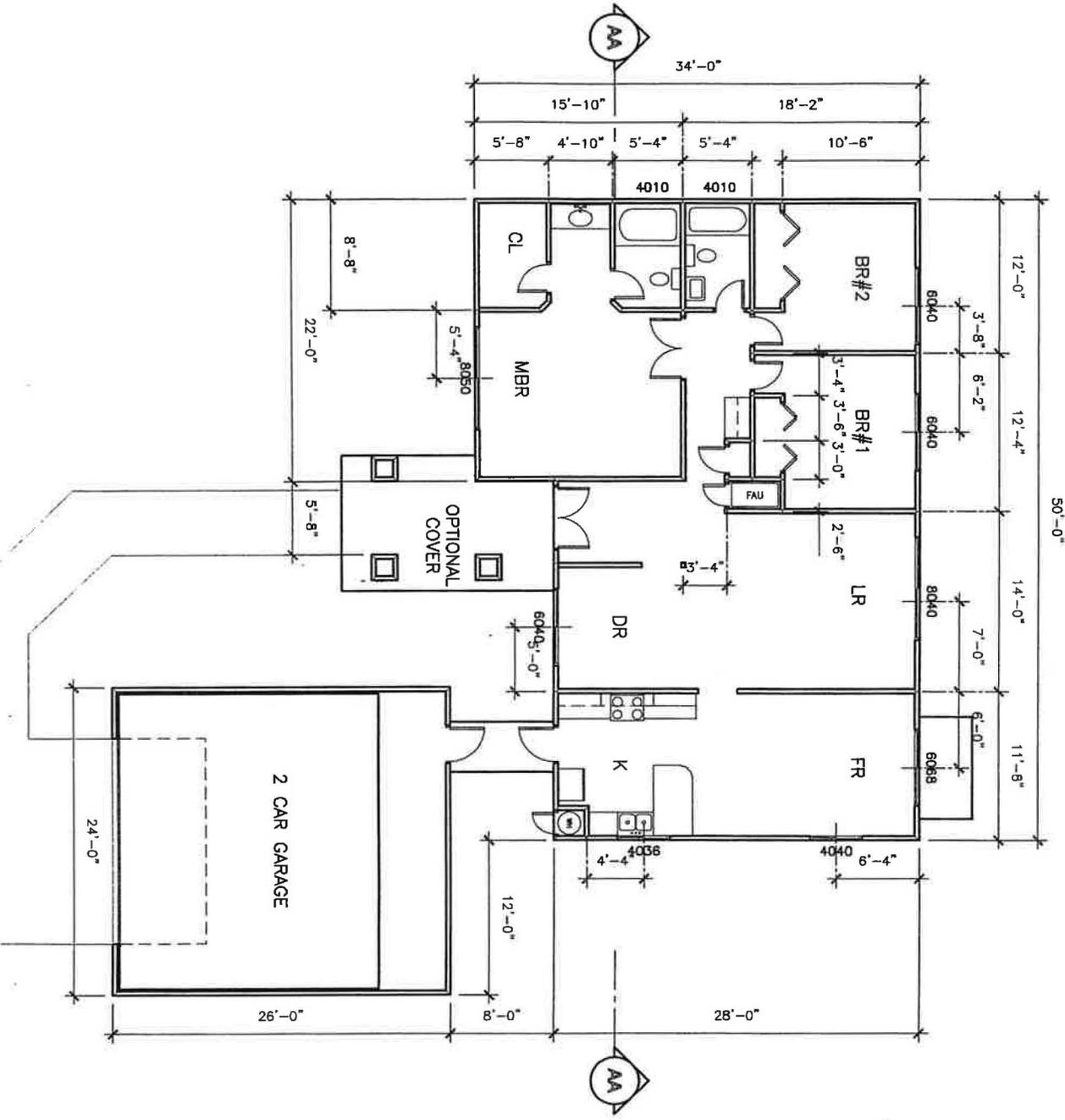


ISSUE DATE:	11-29-07
REVISION DATE:	10-22-07
SCALE:	1/16" = 1'-0"
DRAWING NUMBER:	<b>A-1</b> OF 9

<b>PROJECT NAME:</b> <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709	<b>NEW MILLENIUM ARCHITECTS</b>
<b>DRAWING TITLE:</b> <b>SITE PLAN/ROOF PLAN</b>	1825 Rock River Rd Diamond Bar CA 91765
<b>DRAWING BY:</b> <b>JOSE ALEXANDER GOMEZ</b>	TEL: 909 -723 3959 <a href="http://www.newmilleniummarch.com">www.newmilleniummarch.com</a>

<b>PROJECT NAME:</b> <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709	<b>NEW MILLENIUM ARCHITECTS</b>
<b>DRAWING TITLE:</b> <b>SITE PLAN/ROOF PLAN</b>	1825 Rock River Rd Diamond Bar CA 91765
<b>DRAWING BY:</b> <b>JOSE ALEXANDER GOMEZ</b>	TEL: 909 -723 3959 <a href="http://www.newmilleniummarch.com">www.newmilleniummarch.com</a>

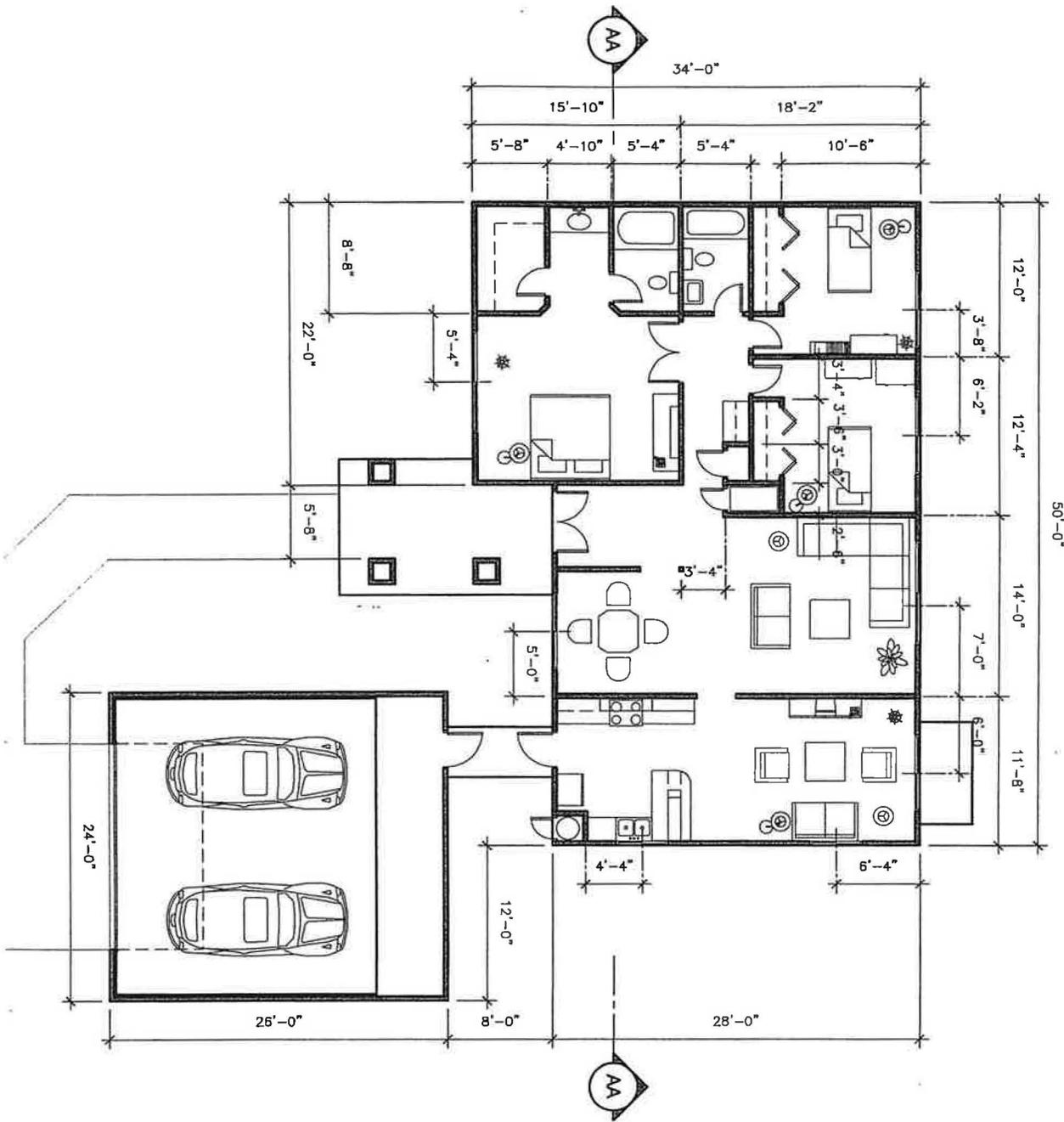




ISSUE DATE:	11-29-07
REVISION DATE:	10-22-07
SCALE:	1/8" = 1'-0"
DRAWING NUMBER:	A-2 OF 9

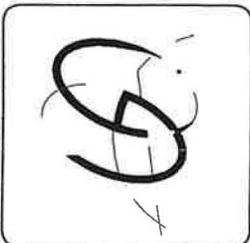
<b>PROJECT NAME:</b> <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709	<b>NEW MILLENIUM ARCHITECTS</b>  1825 Rock River Rd Diamond Bar CA 91765  TEL: 909-723 3959 www.newmilleniumarch.com
<b>DRAWING TITLE:</b> <b>FLOOR PLAN-DESIGN DEVELOPMENT</b>	
<b>DRAWING BY:</b> <b>JOSE ALEXANDER GOMEZ</b>	

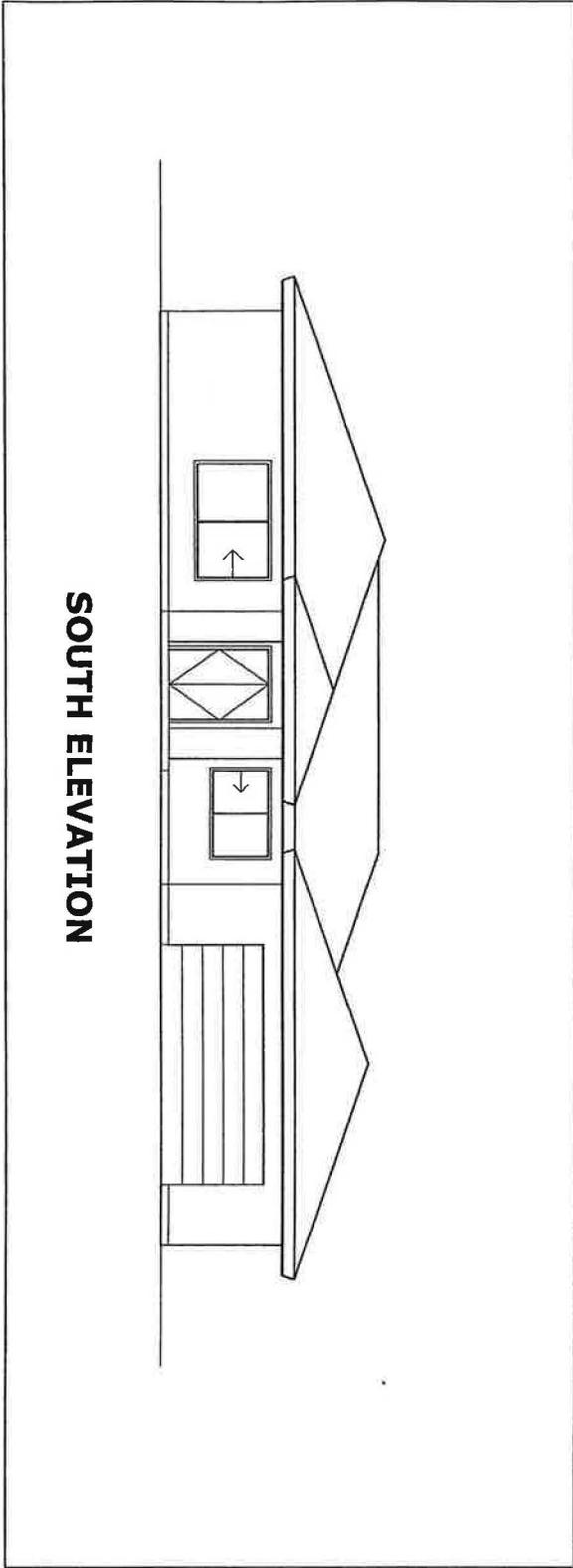
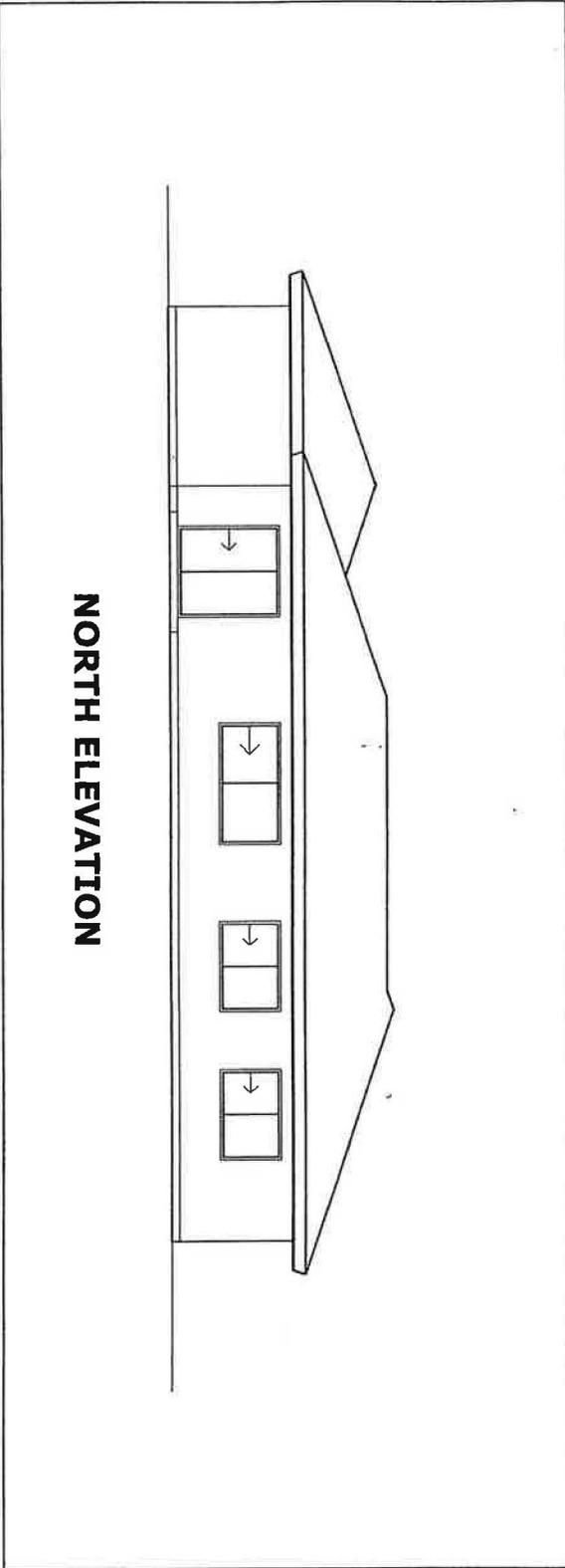




<b>DRAWING NUMBER:</b> <b>A-3</b> OF 9	<b>ISSUE DATE:</b> 11-29-07
	<b>REVISION DATE:</b> 10-22-07
	<b>SCALE:</b> 1/8" = 1'-0"
	<b>DRAWING NUMBER:</b> A-3 OF 9

<b>PROJECT NAME:</b> <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709	<b>NEW MILLENIUM ARCHITECTS</b>
<b>DRAWING TITLE:</b> <b>FLOOR PLAN-DESIGN</b>	1825 Rock River Rd Diamond Bar CA 91765
<b>DRAWING BY:</b> <b>JOSE ALEXANDER GOMEZ</b>	TEL: 909 -723 3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>

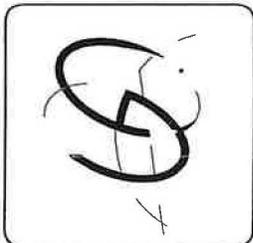


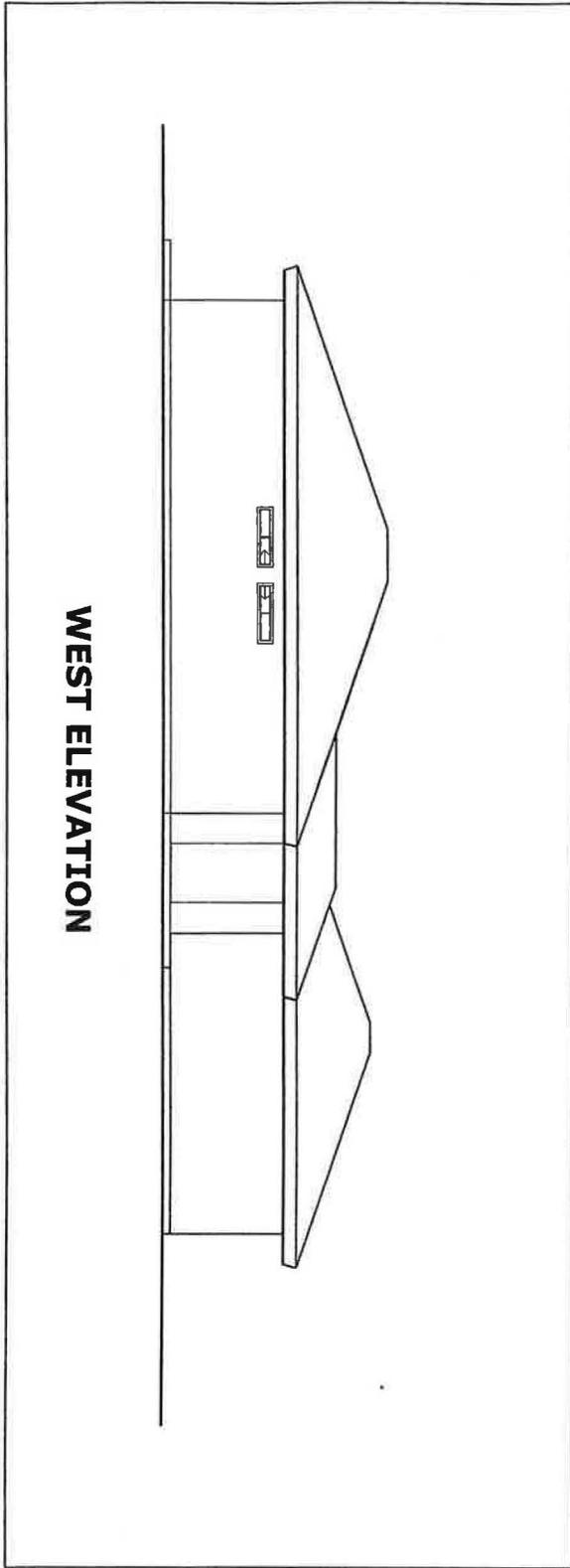


ISSUE DATE:	11-29-07
REVISION DATE:	10-22-07
SCALE:	1/8" = 1'-0"
DRAWING NUMBERS	<b>A-4</b> OF-9

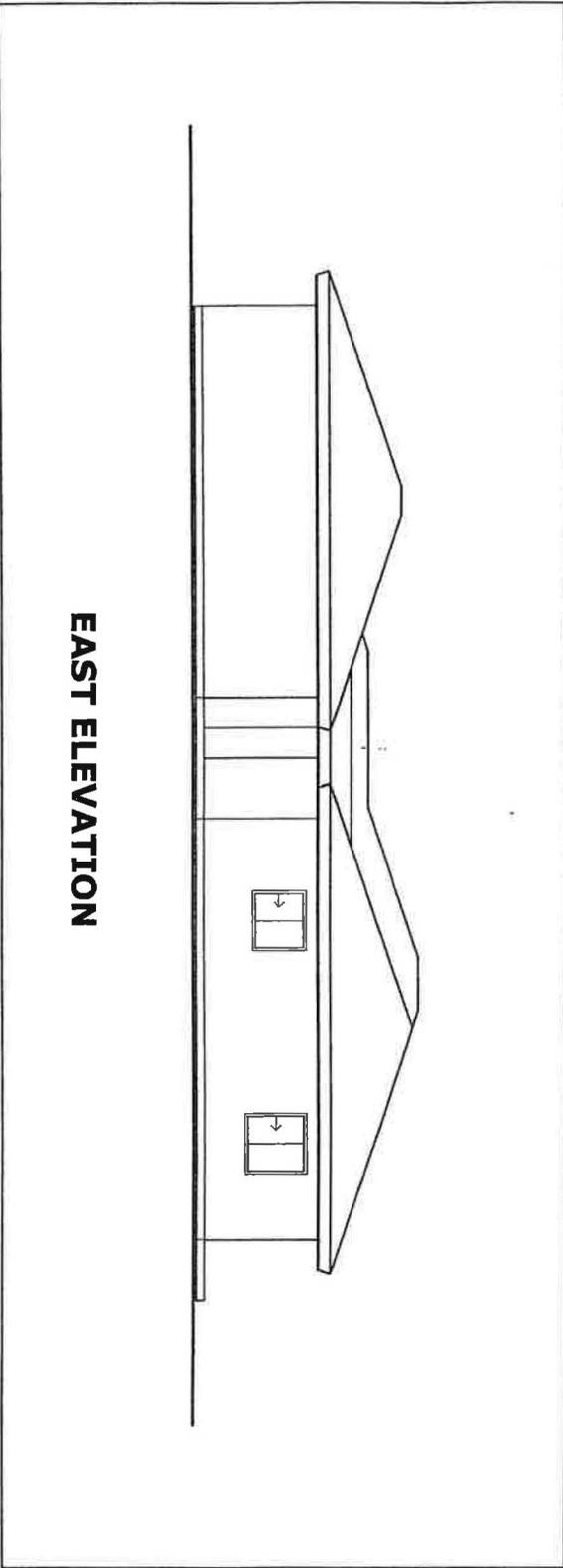
PROJECT NAME:	<b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709
DRAWING TITLE:	<b>ELEVATIONS NORTH- SOUTH</b>
DRAWING BY:	<b>JOSE ALEXANDER GOMEZ</b>

NEW MILLENIUM ARCHITECTS	1825 Rock River Rd Diamond Bar CA 91765
	TEL: 909 -723 3959 www.newmilleniumarch.com





**WEST ELEVATION**



**EAST ELEVATION**

**PROJECT NAME:**

**TRACT HOME**

Location: 1230 Main St. Chino, CA 91709

**DRAWING TITLE:**

**ELEVATIONS WEST- EAST**

**DRAWING BY:**

**JOSE ALEXANDER GOMEZ**

**NEW MILLENIUM ARCHITECTS**

1825 Rock River Rd Diamond Bar CA 91765

TEL: 909 -723 3959

[www.newmilleniumarch.com](http://www.newmilleniumarch.com)



**ISSUE DATE:**

11-29-07

**REVISION DATE:**

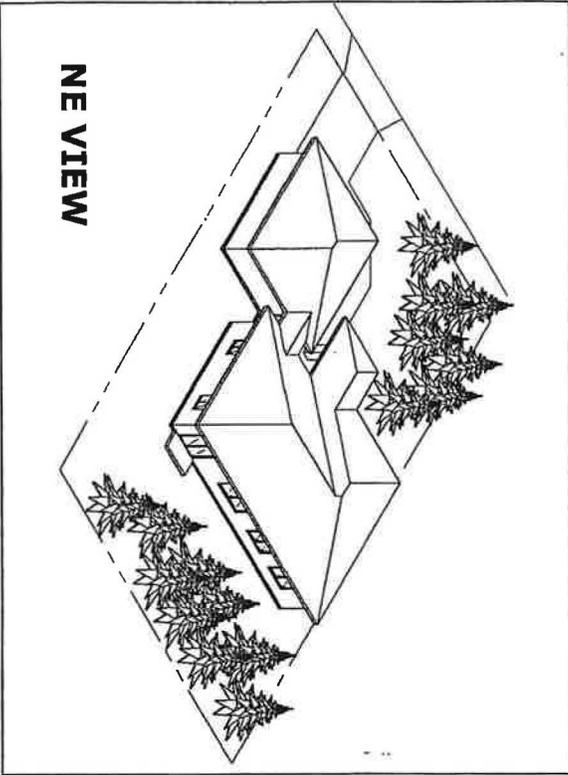
10-22-07

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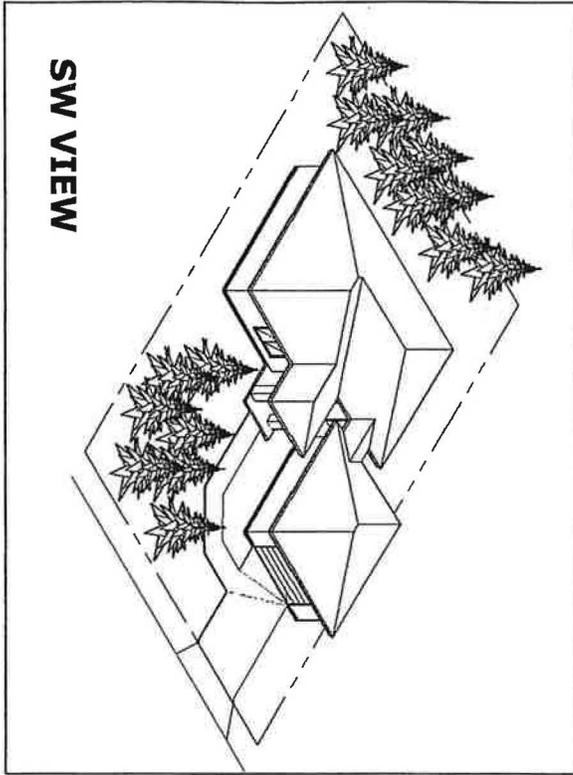
1/8"=1'-0"

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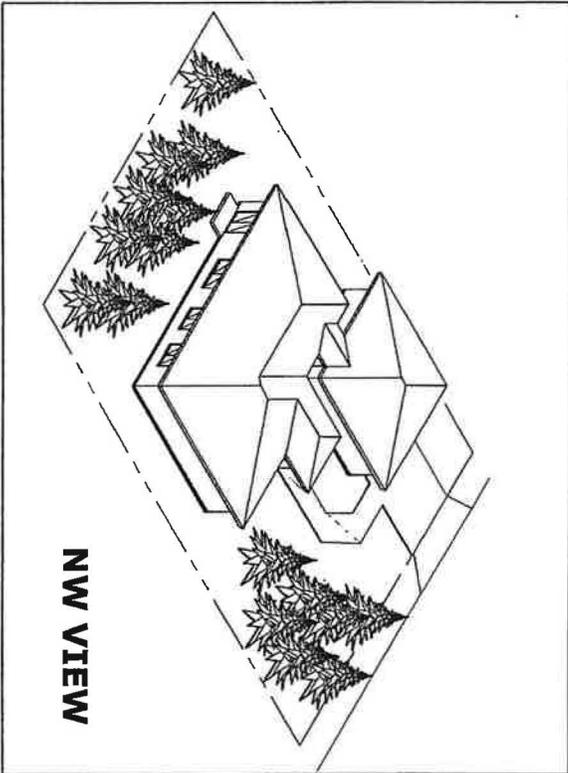
**A-5**  
OF-9



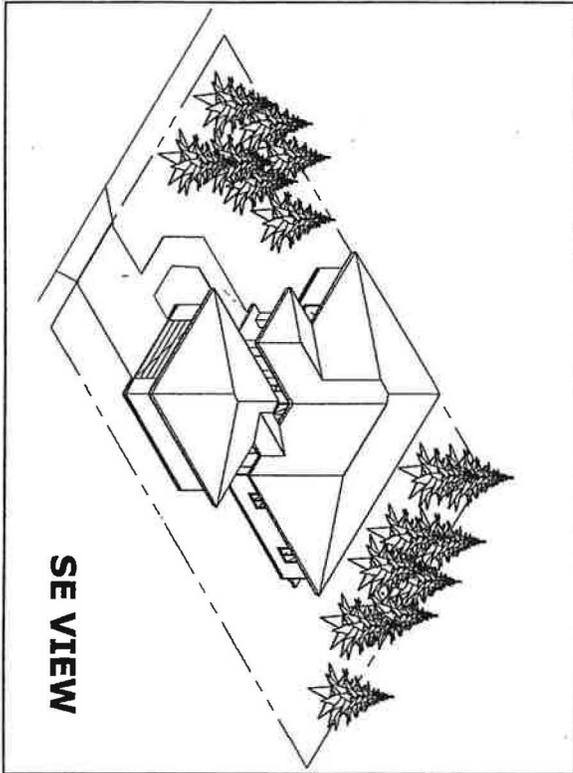
**NE VIEW**



**SW VIEW**



**NW VIEW**

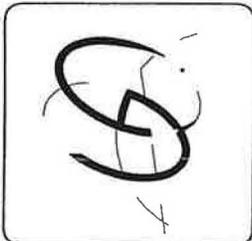


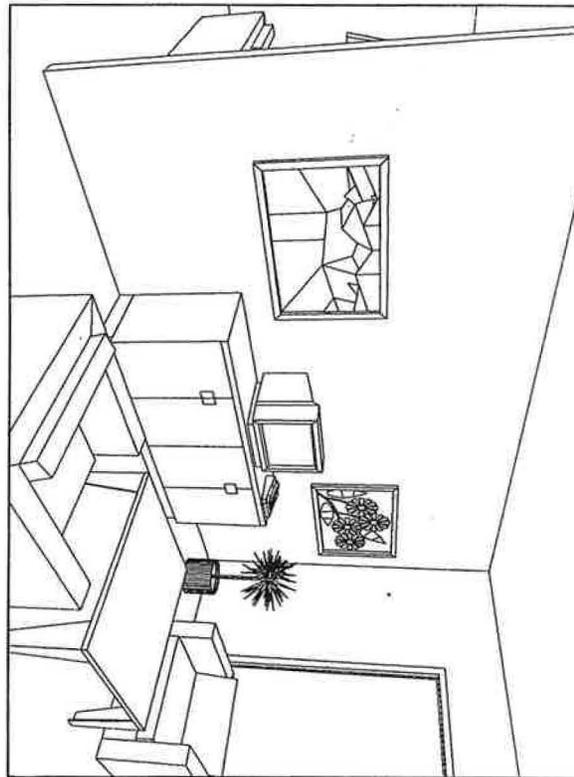
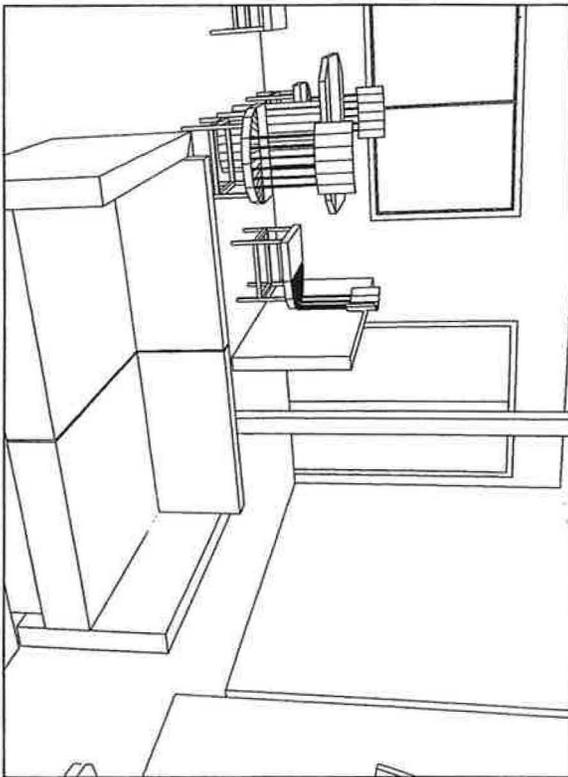
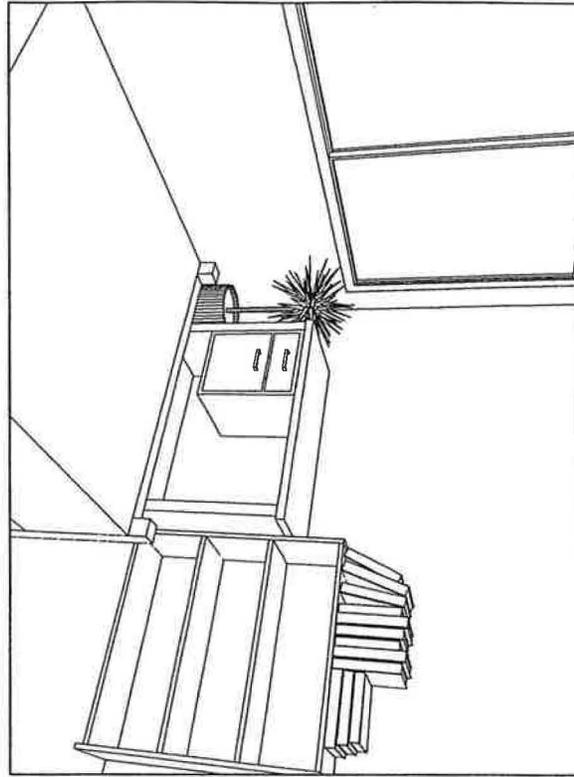
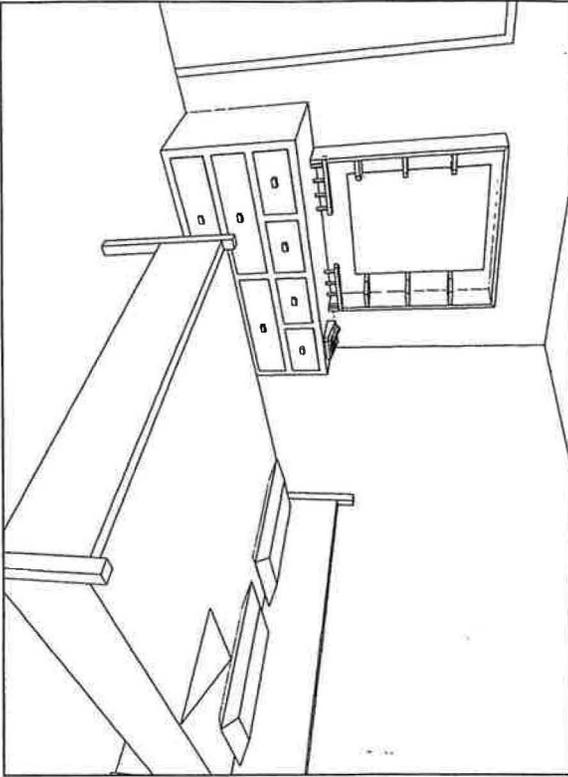
**SE VIEW**

ISSUE DATE:	11-29-07
REVISION DATE:	10-22-07
SCALE:	N/A
DRAWING NUMBER:	<b>A-6</b> OF-9

<b>PROJECT NAME:</b> <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709
<b>DRAWING TITLE:</b> <b>ISOMETRICS</b>
<b>DRAWING BY:</b> <b>JOSE ALEXANDER GOMEZ</b>

<b>NEW MILLENIUM ARCHITECTS</b>  1825 Rock River Rd Diamond Bar CA 91765
TEL: 909 -723 3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>

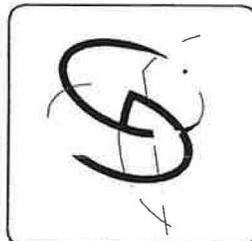


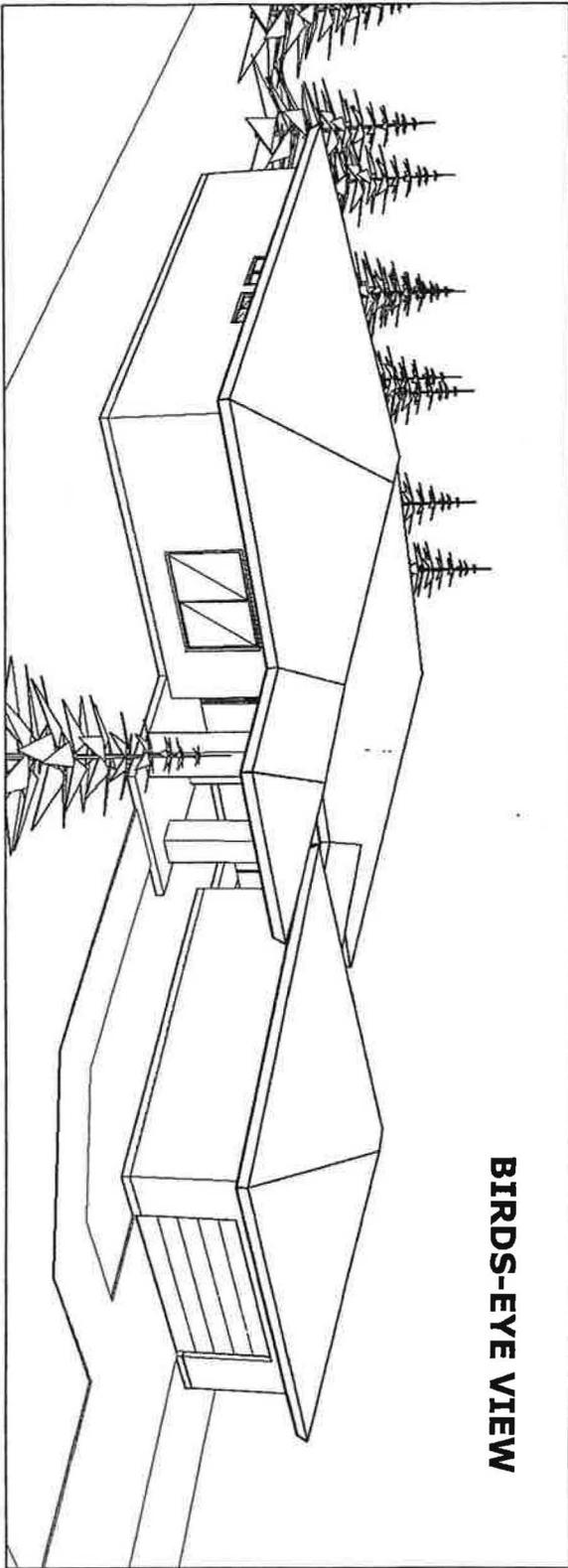


ISSUE DATE:	11-29-07
REVISION DATE:	10-22-07
SCALE:	N/A
DRAWING NUMBER:	A-7 OF-9

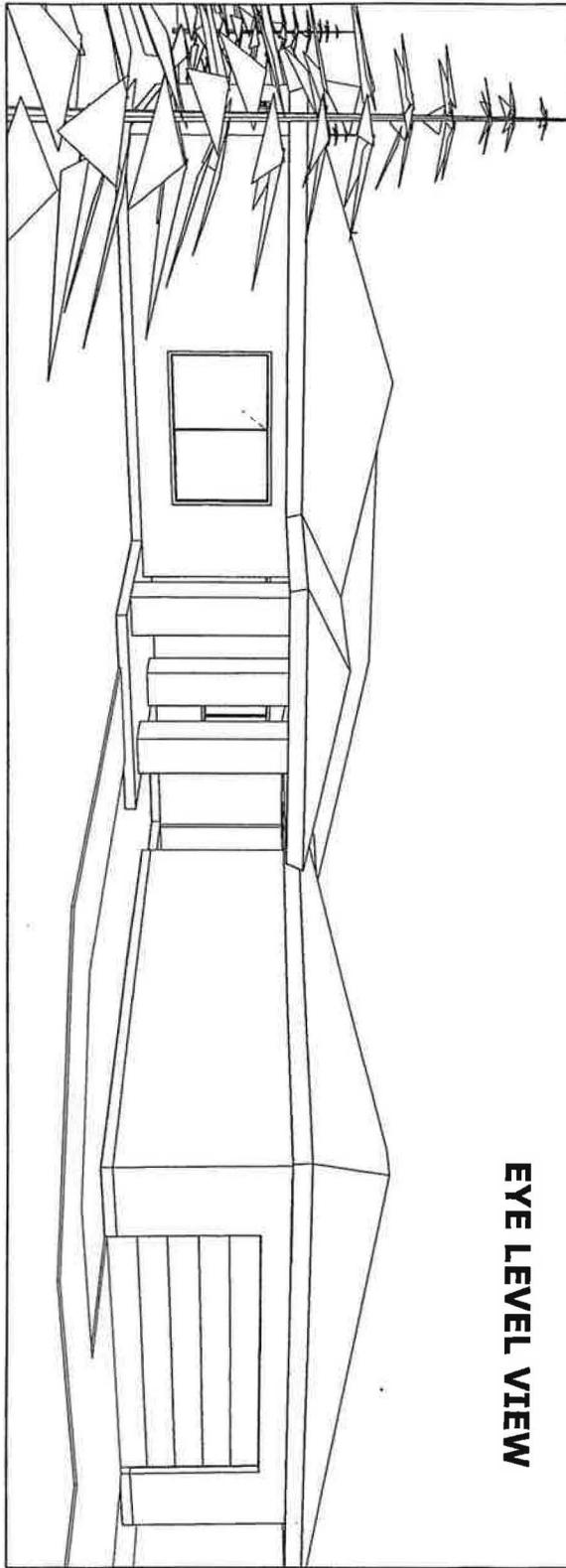
<b>PROJECT NAME:</b> <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709
<b>DRAWING TITLE:</b> <b>INTERIOR PERSPECTIVES</b>
<b>DRAWING BY:</b> <b>JOSE ALEXANDER GOMEZ</b>

<b>NEW MILLENIUM ARCHITECTS</b>  1825 Rock River Rd Diamond Bar CA 91765  TEL: 909-723 3959 <a href="http://www.newmilleniummarch.com">www.newmilleniummarch.com</a>
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**BIRDS-EYE VIEW**

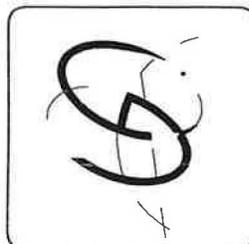


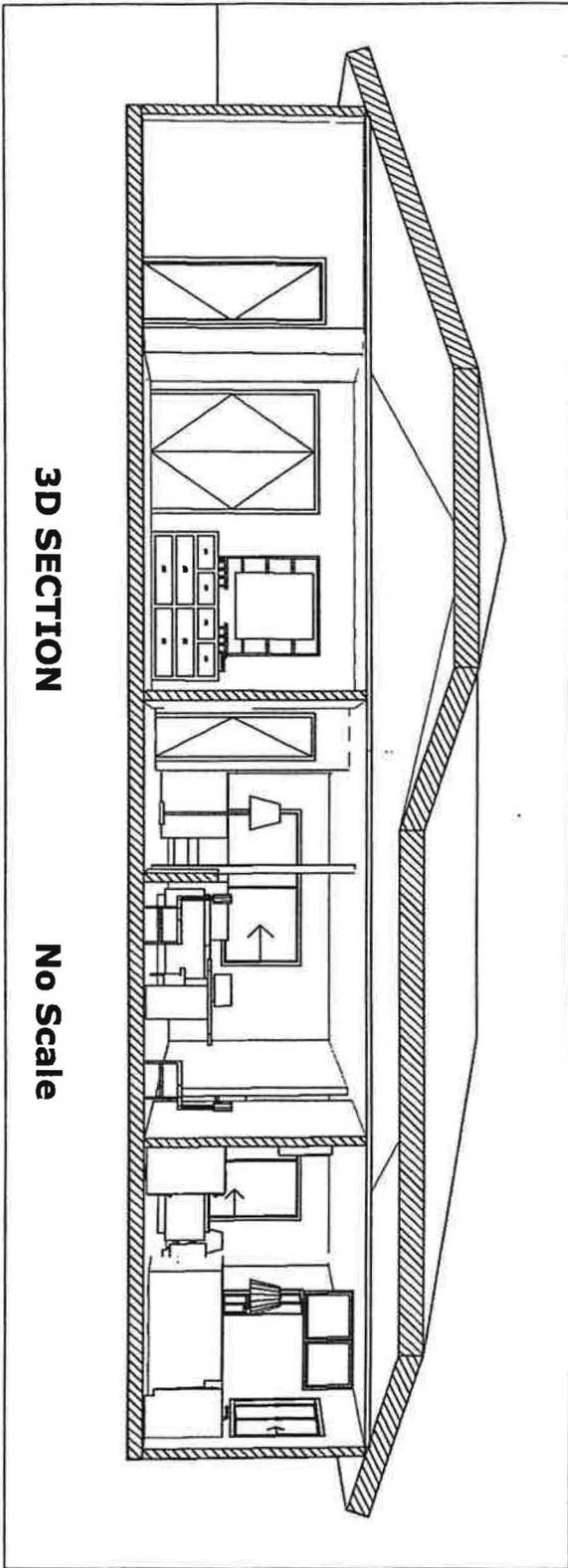
**EYE LEVEL VIEW**

ISSUE DATE:	11-29-07
REVISION DATE:	10-22-07
SCALE:	N/A
DRAWING NUMBER:	<b>A-8</b> OF-9

PROJECT NAME: <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709
DRAWING TITLE: <b>EXTERIOR PERSPECTIVES</b>
DRAWING BY: <b>JOSE ALEXANDER GOMEZ</b>

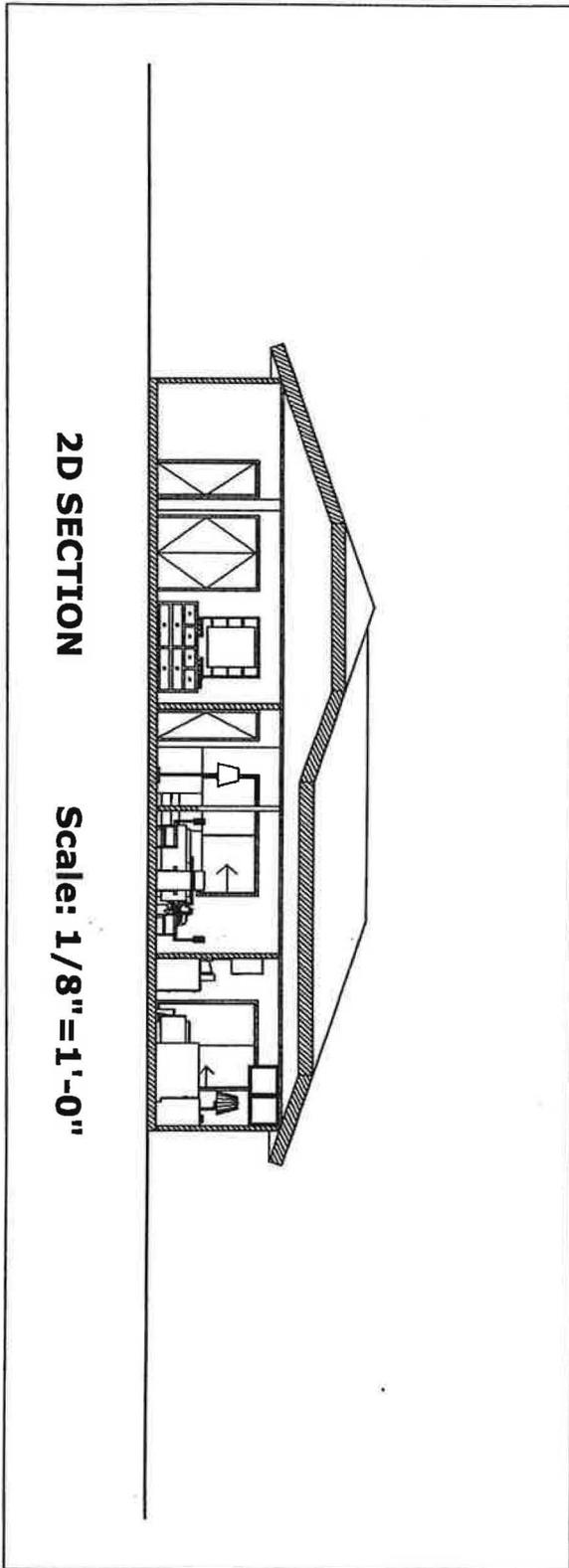
<b>NEW MILLENIUM ARCHITECTS</b>
1825 Rock River Rd Diamond Bar CA 91765
TEL: 909-723 3959 www.newmilleniumarch.com





**3D SECTION**

**No Scale**

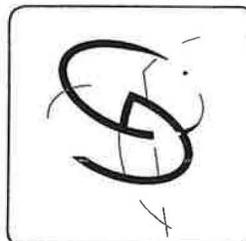


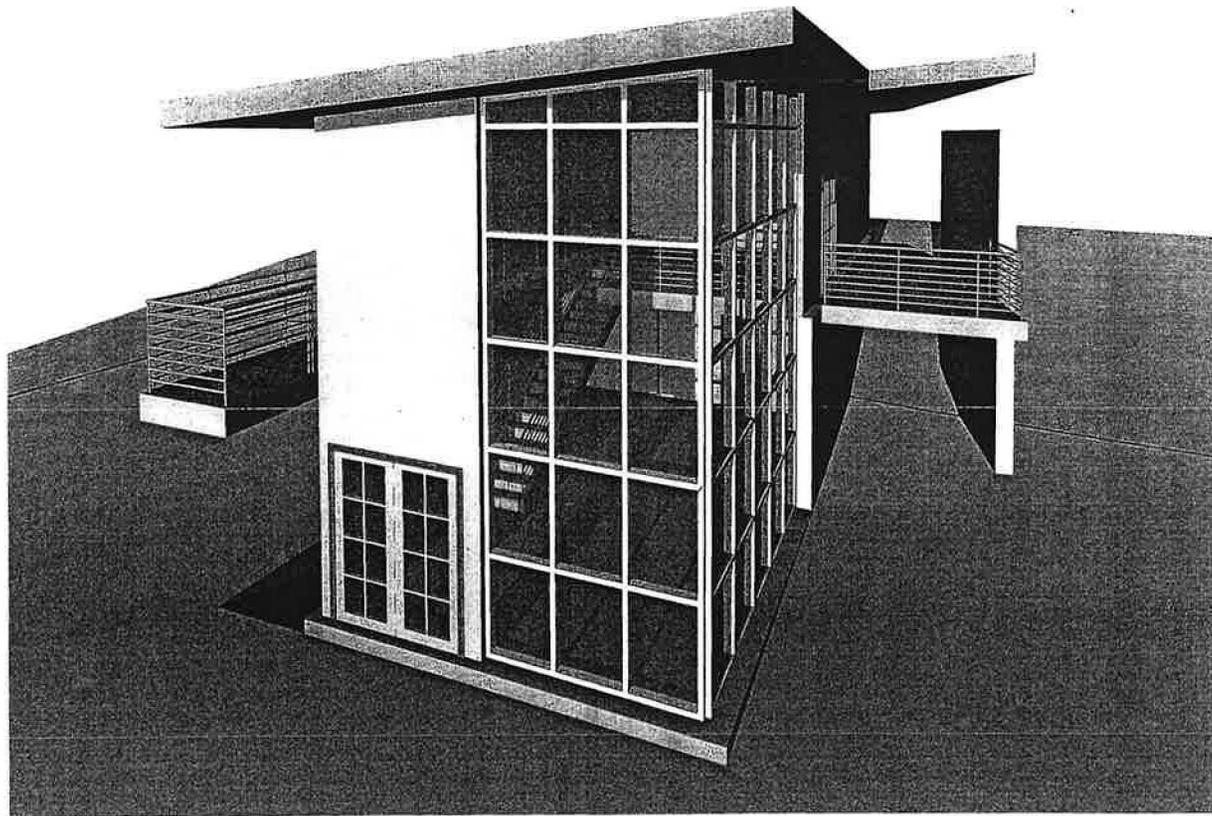
**2D SECTION**

**Scale: 1/8" = 1'-0"**

ISSUE DATE:	11-29-07
REVISION DATE:	10-22-07
SCALE:	N/A
DRAWING NUMBER:	<b>A-9</b> OF-9

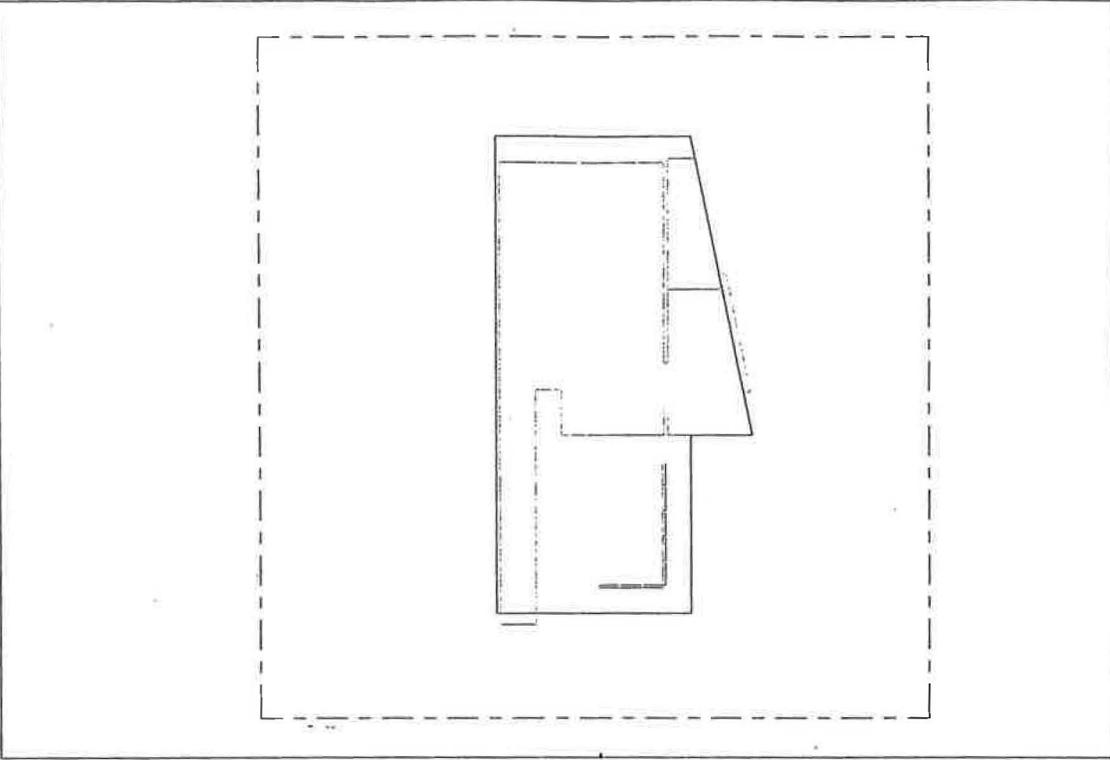
<b>PROJECT NAME:</b> <b>TRACT HOME</b> Location: 1230 Main St. Chino, CA 91709	<b>NEW MILLENIUM ARCHITECTS</b>  1825 Rock River Rd Diamond Bar CA 91765  TEL: 909 -723 3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>
<b>DRAWING TITLE:</b> <b>SECTIONS 2D-3D</b>	
<b>DRAWING BY:</b> <b>JOSE ALEXANDER GOMEZ</b>	



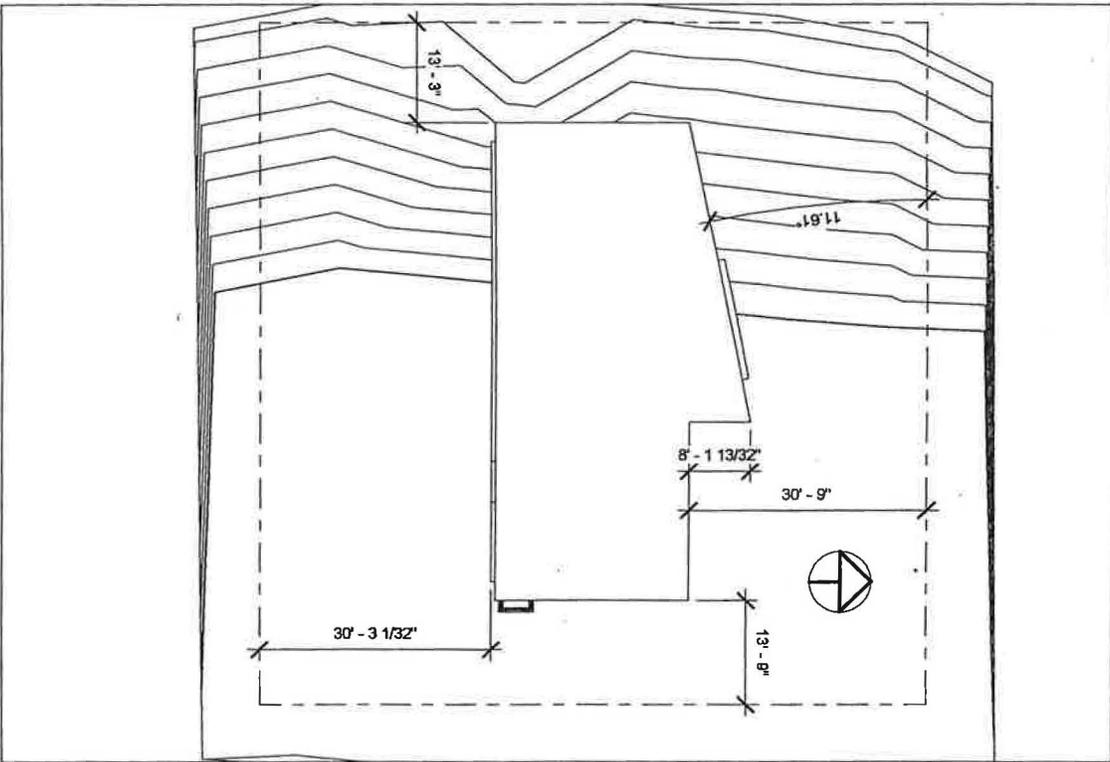


**JOSE ALEXANDER GOMEZ**  
**ARCH 18**  
**PROJECT 3**  
**REVIT-TUTORIAL**

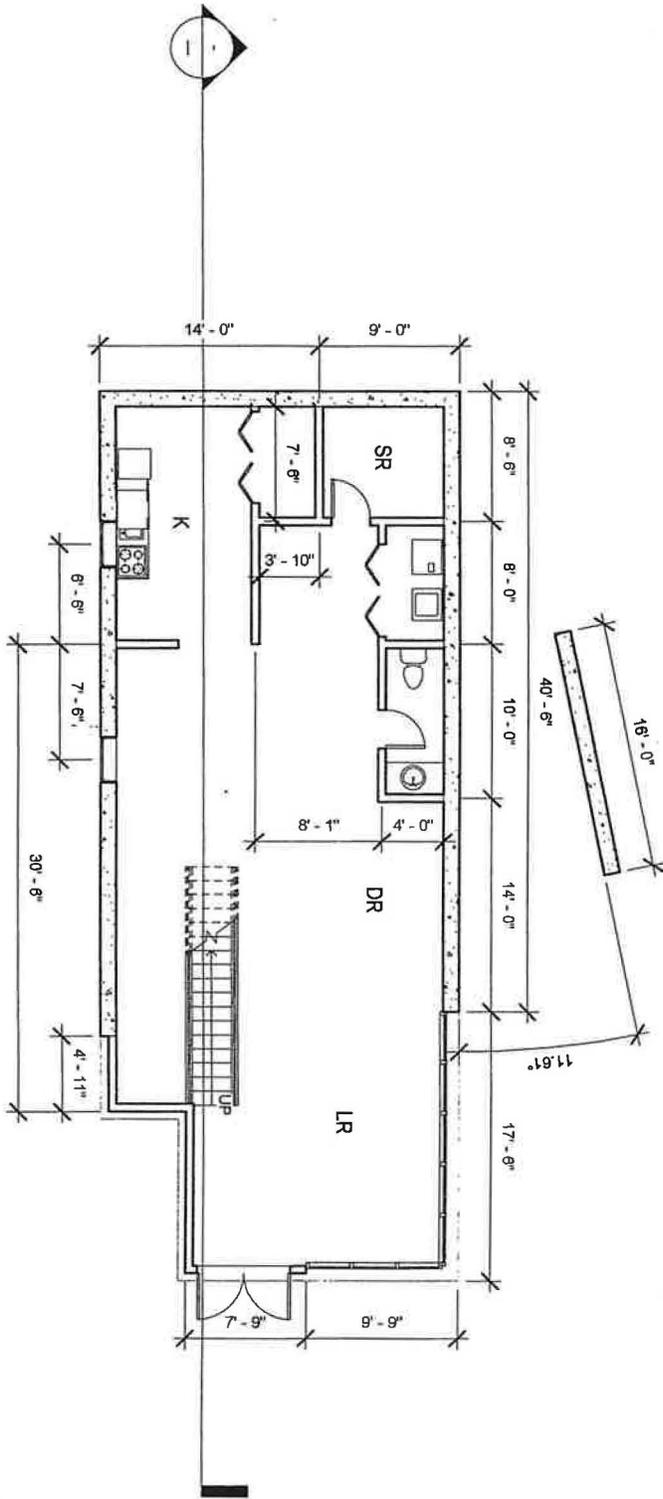
**ROOF PLAN**



**SITE PLAN**

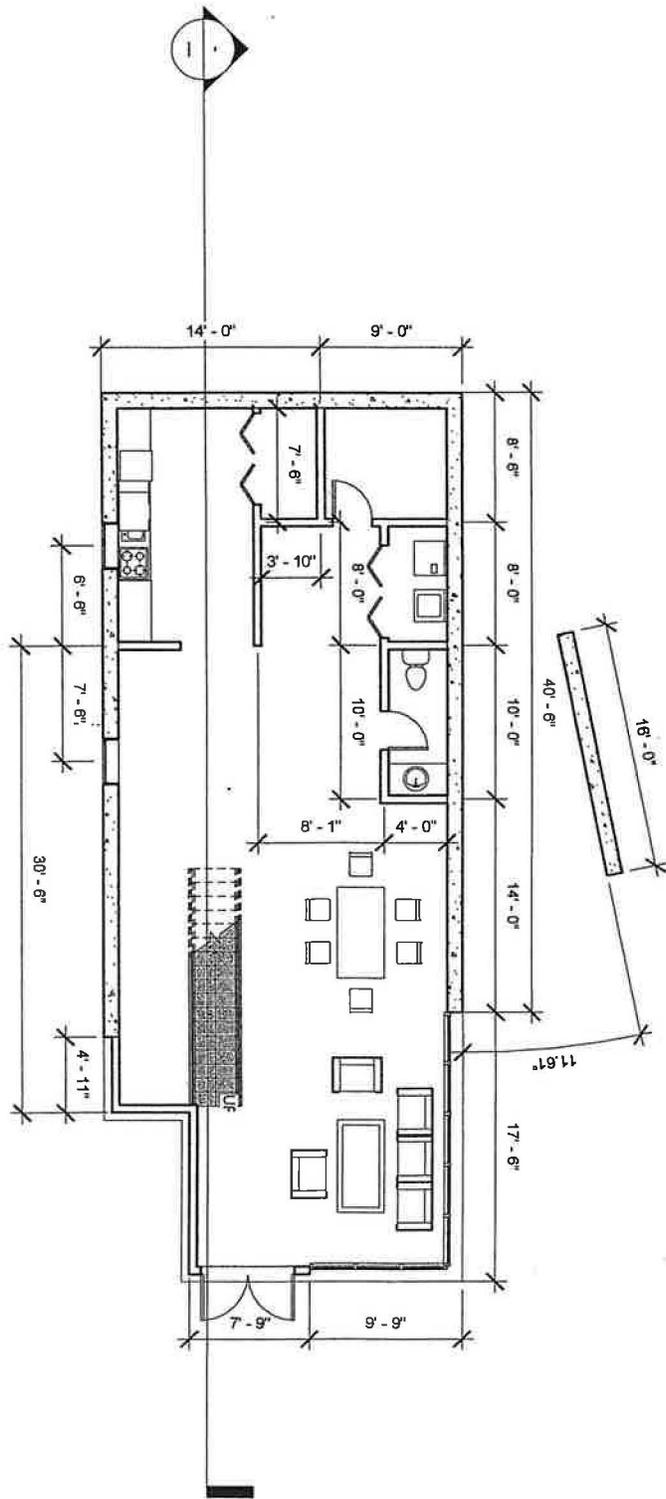


Drawing Number: <b>A-1</b> of 11	Issue Date: <b>11-21-07</b>	Project Name: <b>REVIT TUTORIAL- HOME</b> <small>Location: 2815 Walnut Creek Dr, Upland CA 91784</small>		
	Revision Date: <b>11-21-07</b>	Drawing Title: <b>SITE PLAN-ROOF PLAN</b>		<b>NEW MILLENIUM ARCHITECTS</b>  1825 Rock River Rd Diamond Bar CA 91765
	Scale: <b>1/8"=1'-0"</b>	Drawing by: <b>JOSE ALEXANDER GOMEZ</b>		Tel: 909-723-3959 <a href="http://www.newmilleniamarch.com">www.newmilleniamarch.com</a>



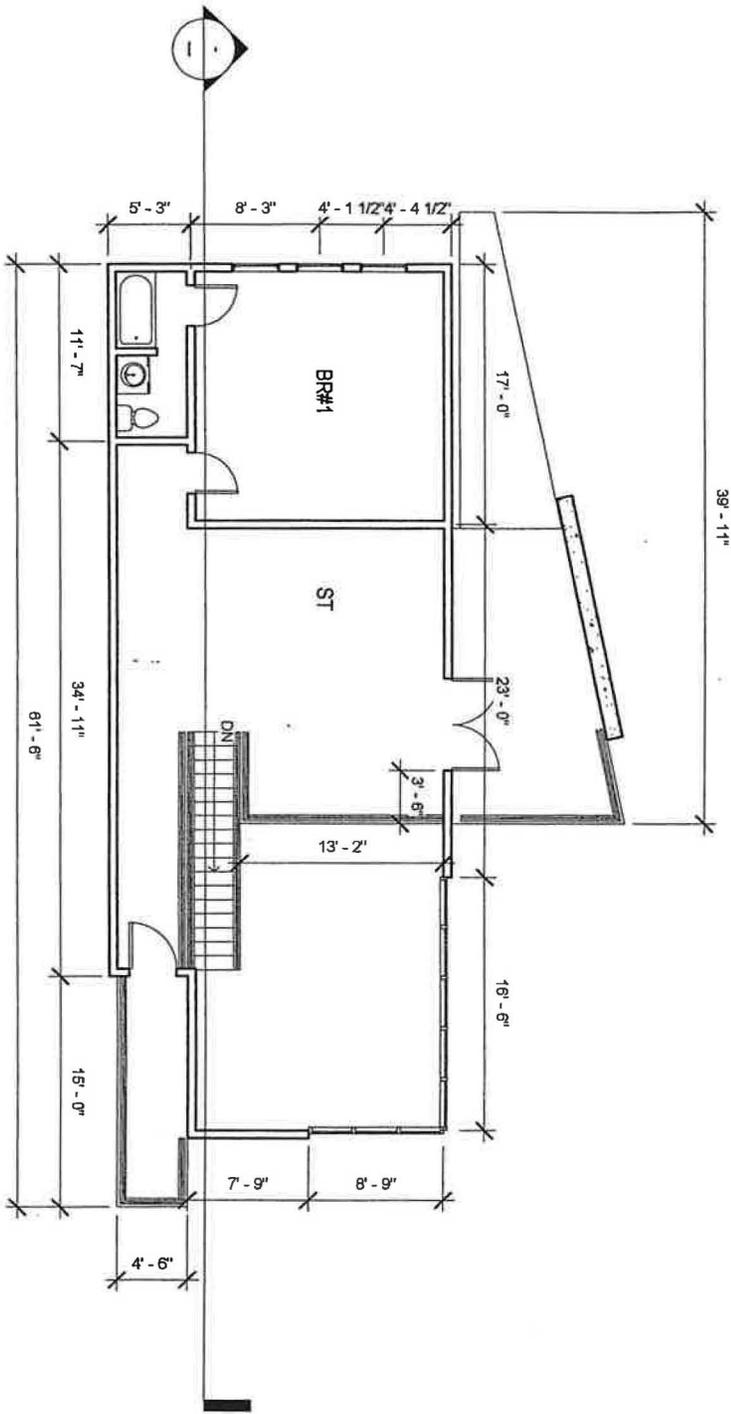
01a LOWER LEVEL DESIGN  
 DEVELOPMENT  
 1/8" = 1'-0"

Issue Date: 12-03-07 Revision Date: 12-03-07 Scale: 1/8"=1'-0" Drawing Number: A-2 of 11	Project Name: <b>REVIT TUTORIAL- HOME</b> <small>Location: 2815 Walnut Creek Dr, Upland CA 91784</small>	<b>NEW MILLENIUM ARCHITECTS</b>	
	Drawing Title: <b>LOWER LEVEL DESIGN DEVELOPMENT</b>	1826 Rock River Rd Diamond Bar CA 91766	
	Drawing by: <b>JOSE ALEXANDER GOMEZ</b>	Tel: 909-723-3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>	



① 01b LOWER LEVEL DESIGN  
 1/8" = 1'-0"

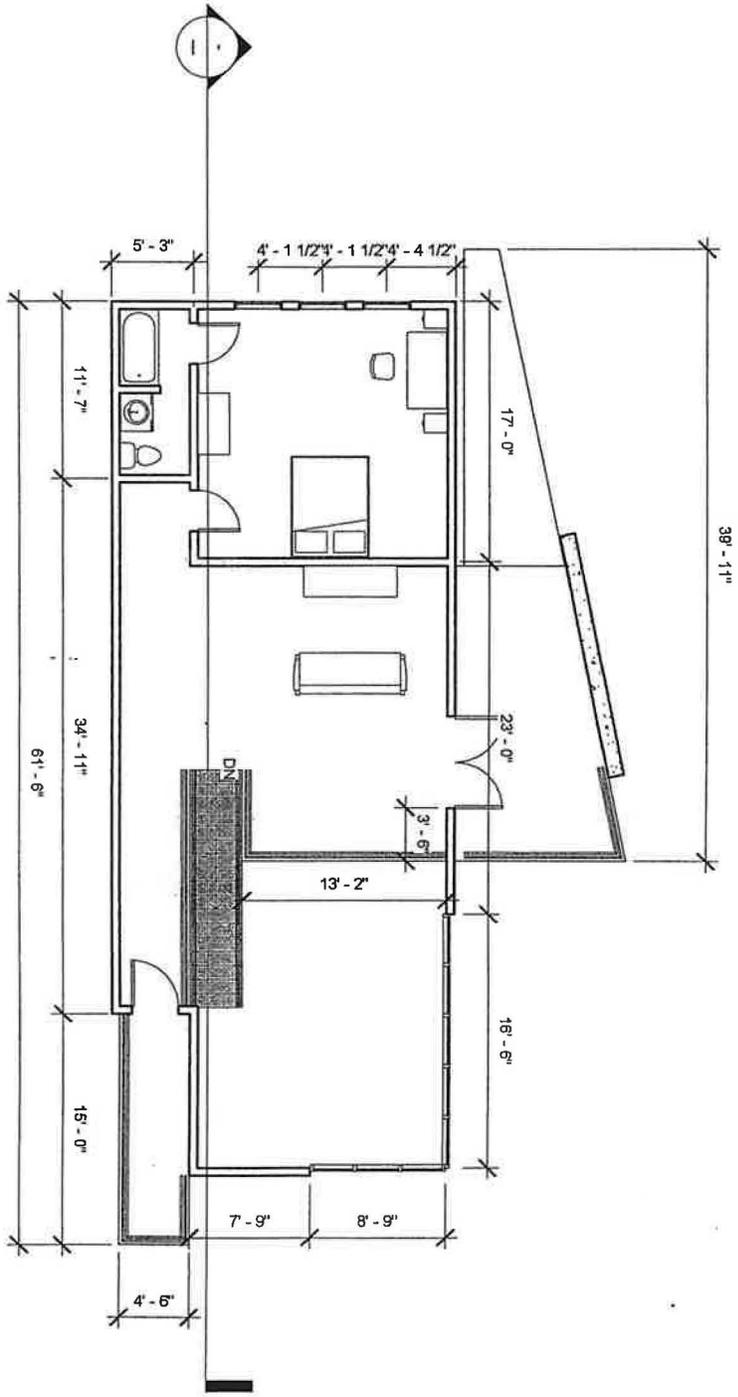
Issue Date: <b>12-03-07</b> Revision Date: <b>12-03-07</b> Scale: <b>1/8"=1'-0"</b> Drawing Number: <b>A-3</b> of 11	Project Name: <b>REVIT TUTORIAL- HOME</b> <small>Location: 2815 Walnut Creek Dr, Upland CA 91784</small>	<b>NEW MILLENIUM ARCHITECTS</b>	
	Drawing Title: <b>LOWER LEVEL DESIGN</b>	1825 Rock River Rd Diamond Bar CA 91765	
	Drawing by: <b>JOSE ALEXANDER GOMEZ</b>	Tel: 909-723-3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>	



02a ENTRY LEVEL DESIGN  
 DEVELOPMENT  
 1/8" = 1'-0"

Issue Date: 12-03-07 Revision Date: 12-03-07 Scale: 1/8"=1'-0" Drawing Number: A-4 of 11	Project Name: <b>REVIT TUTORIAL- HOME</b> <small>Location: 2615 Walnut Creek Dr, Upland CA 91786</small>	<b>NEW MILLENIUM ARCHITECTS</b>	
	Drawing Title: <b>ENTRY LEVEL DESIGN DEVELOPMENT</b>	1825 Rock River Rd Diamond Bar CA 91785	
	Drawing by: <b>JOSE ALEXANDER GOMEZ</b>	Tel: 909-723-3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>	

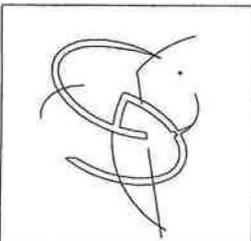
① 02b ENTRY LEVEL DESIGN  
 1/8" = 1'-0"

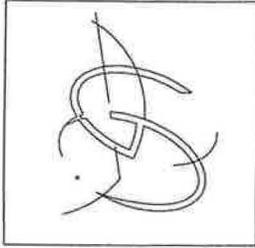


Issue Date:	12-03-07
Revision Date:	12-03-07
Scale:	1/8" = 1'-0"
Drawing Number:	A-5 of 11

Project Name:	<b>REVIT TUTORIAL- HOME</b> <small>Location: 2615 Walnut Creek Dr, Upland CA 91784</small>
Drawing Title:	<b>ENTRY LEVEL DESIGN</b>
Drawing by:	<b>JOSE ALEXANDER GOMEZ</b>

<b>NEW MILLENIUM ARCHITECTS</b>
1825 Rock River Rd Diamond Bar CA 91766
Tel: 909-723-3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>



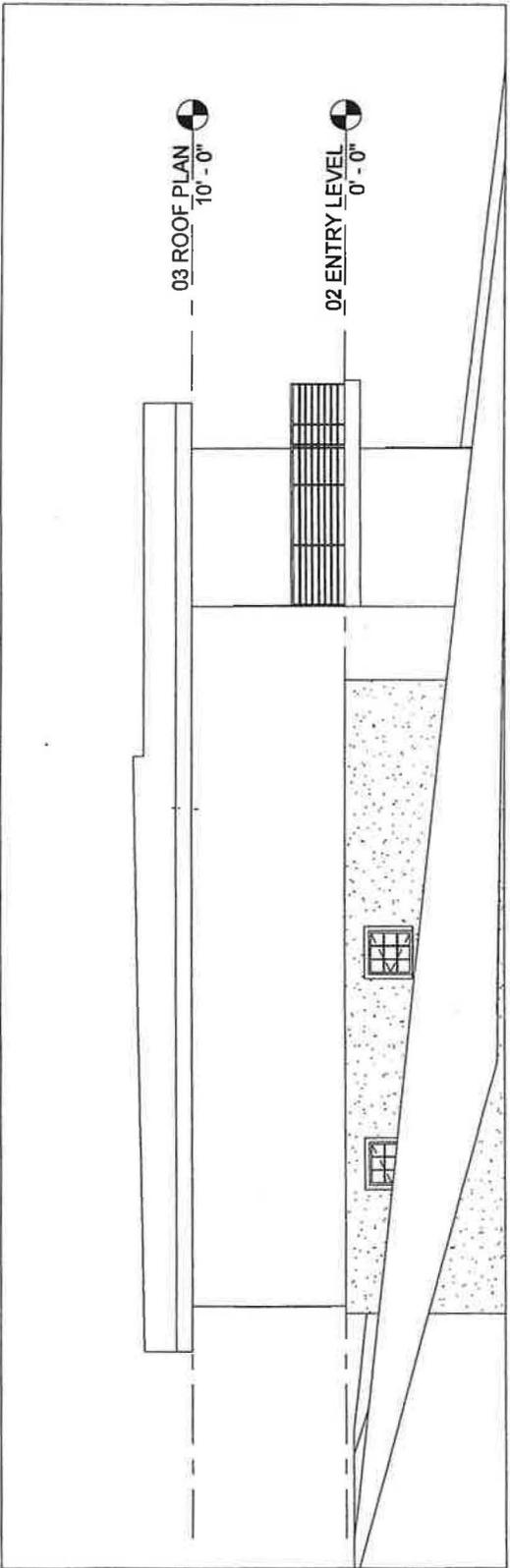


Project Name: <b>REVIT TUTORIAL-HOME</b> Location: 2815 Walnut Creek Dr, Ukiah CA 95784	Drawing Title: <b>ELEVATIONS NORTH-SOUTH</b> 1826 Rock River Rd Diamond Bar CA 91765	Drawing by: <b>JOSE ALEXANDER GOMEZ</b> Tel: 909-723-3959 www.newmillenniumarch.com
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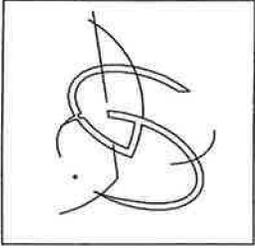
Issue Date: <b>12-03-07</b>	Revision Date: <b>12-03-07</b>
Scale: <b>1/8"=1'-0"</b>	
Drawing Number: <b>A-6 of 11</b>	



① NORTH ELEVATION  
1/8" = 1'-0"

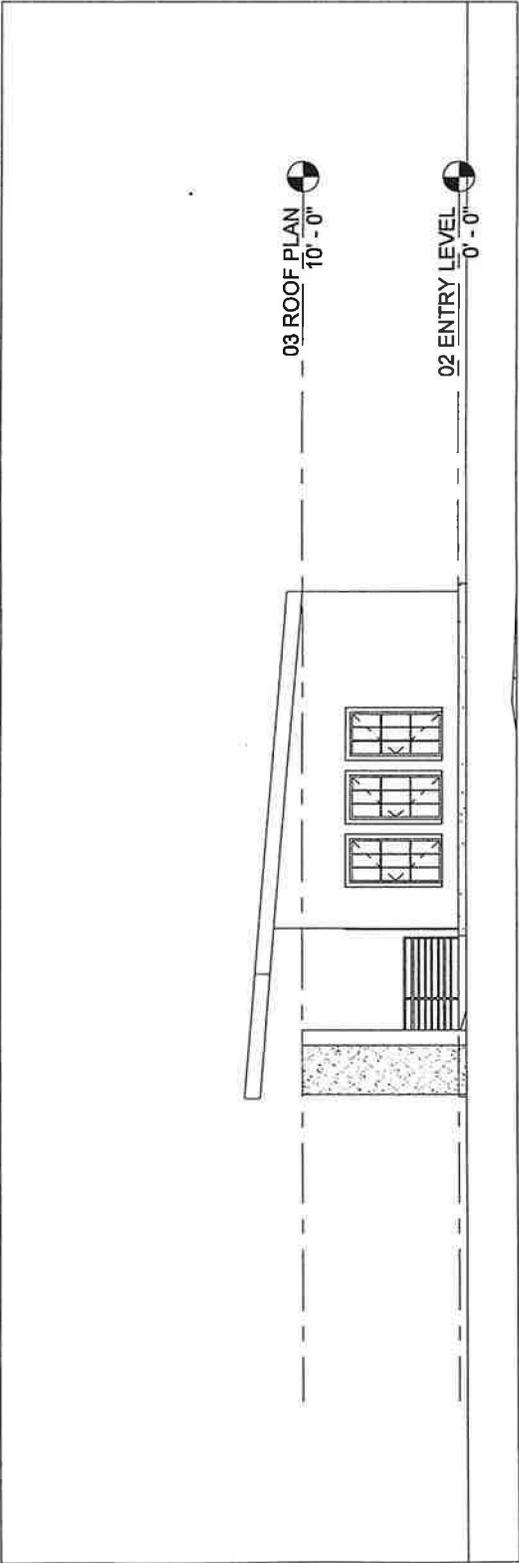


② SOUTH ELEVATION  
1/8" = 1'-0"

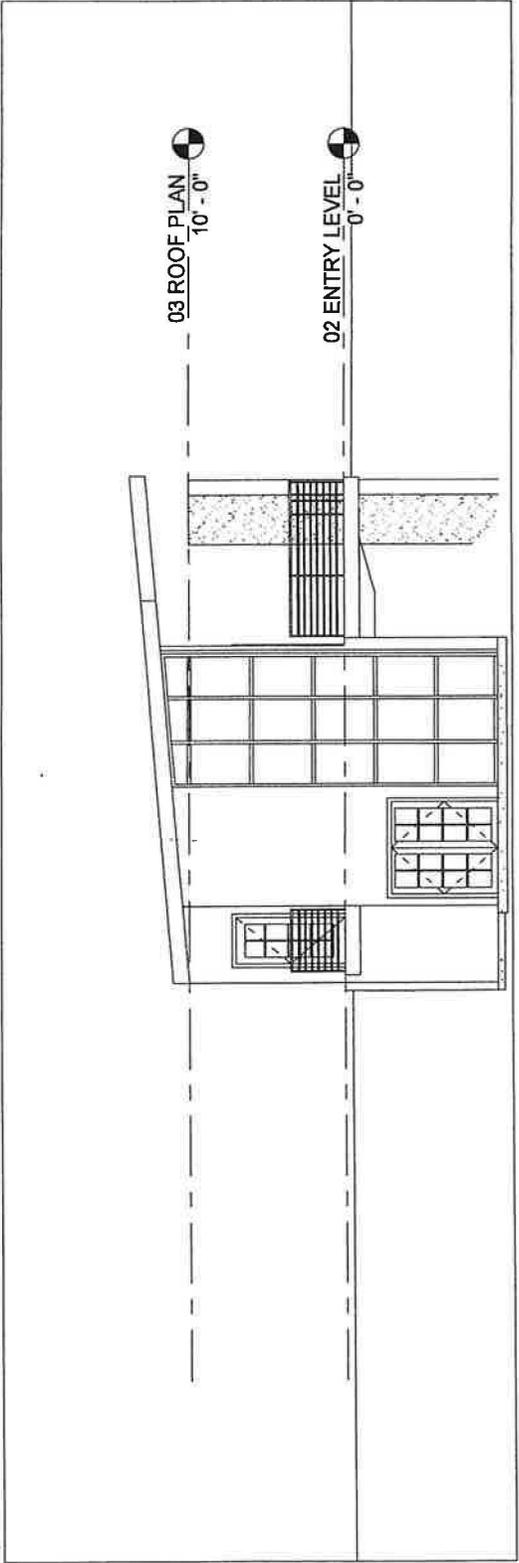


<b>NEW MILLENNIUM ARCHITECTS</b>	<b>PROJECT NAME:</b> REVIT TUTORIAL-HOME Location: 2015 Walnut Creek Dr, Orland CA 91764
1825 Rock River Rd Diamond Bar CA 91765	<b>DRAWING TITLE:</b> ELEVATIONS WEST-EAST
Tel: 909-723-3959 www.newmillenniumarch.com	<b>DRAWING BY:</b> JOSE ALEXANDER GOMEZ

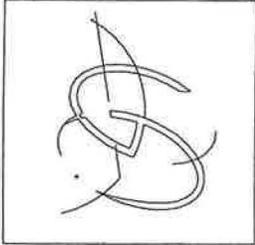
<b>ISSUE DATE:</b> 12-03-07	<b>REVISION DATE:</b> 12-03-07
<b>SCALE:</b> 1/8"=1'-0"	<b>DRAWING NUMBER:</b> A-7 of 11



① WEST ELEVATION  
1/8" = 1'-0"



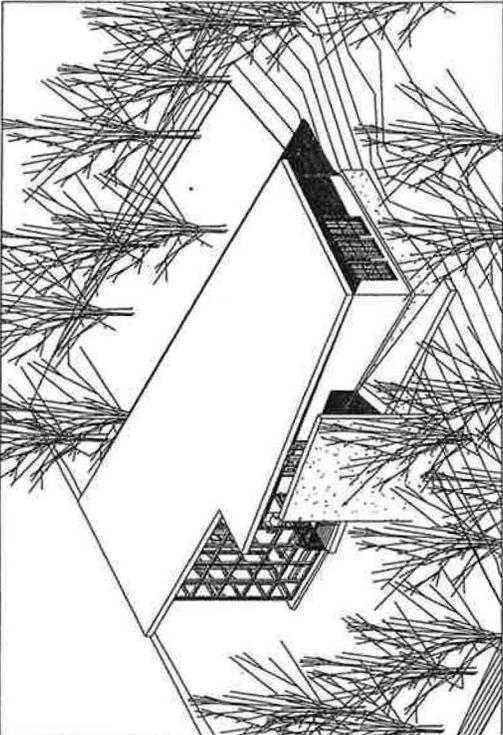
② EAST ELEVATION  
1/8" = 1'-0"



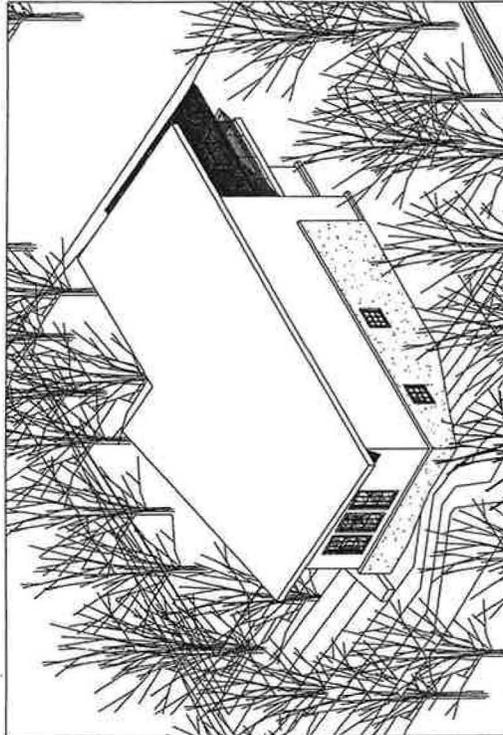
**NEW MILLENNIUM ARCHITECTS**  
Location: 2815 Walnut Creek Dr, Oakland CA 94704  
Drawing Title: **ISOMETRICS**  
1826 Rock River Rd  
Diamond Bar CA 91765  
Tel: 909-723-3959  
www.newmillenniumarch.com

Project Name: **REVIT TUTORIAL - HOME**  
Drawing by: **JOSE ALEXANDER GOMEZ**

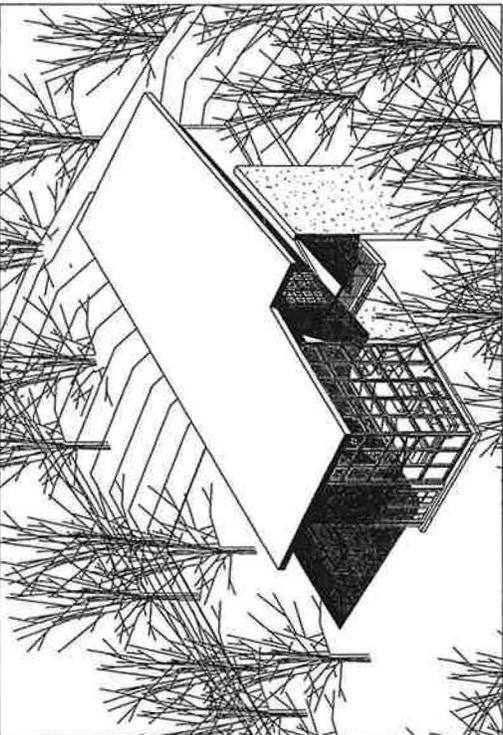
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Revision Date: **12-03-07**  
Scale: **N/A**  
Drawing Number: **A-8** of 11



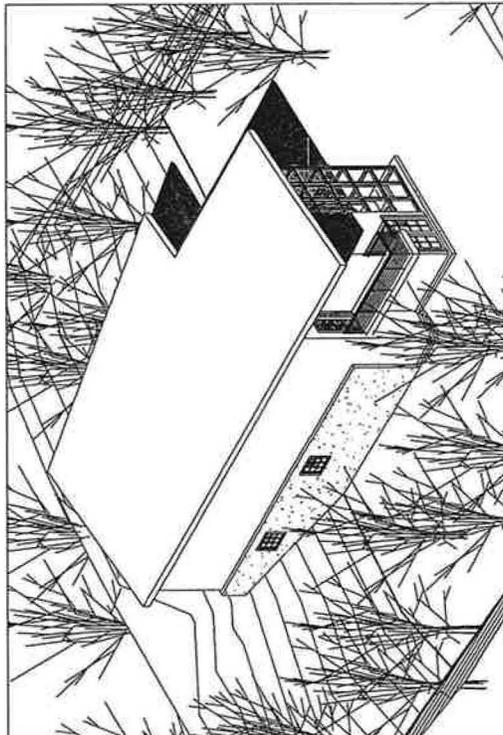
② NORTH WEST VIEW



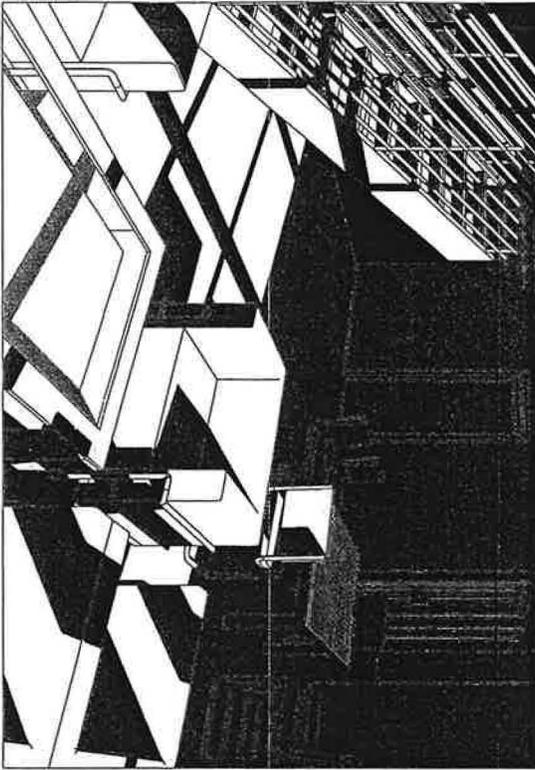
④ SOUTH WEST VIEW



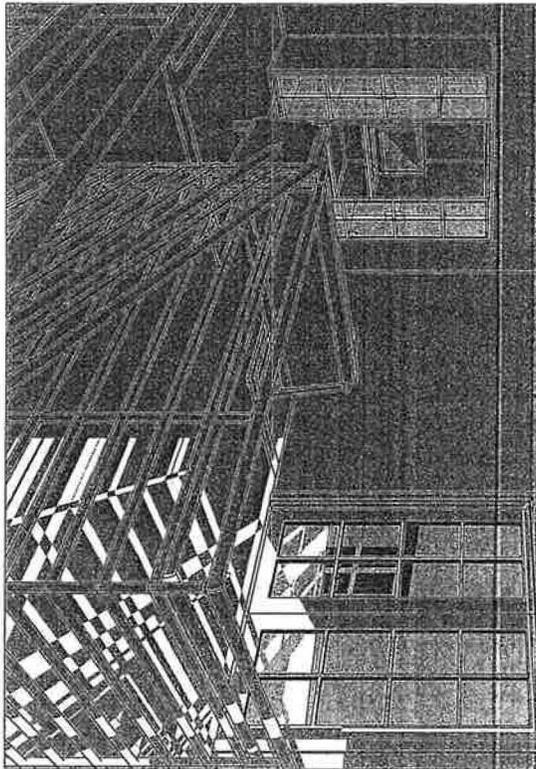
① NORTH EAST VIEW



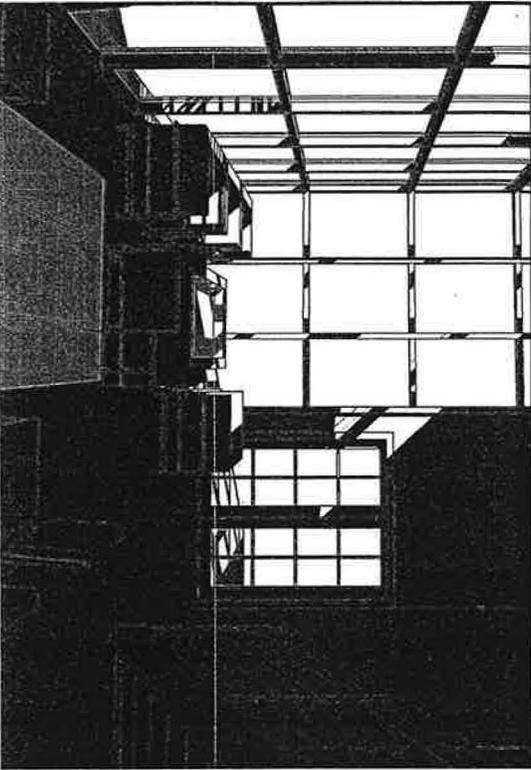
③ SOUTH EAST VIEW



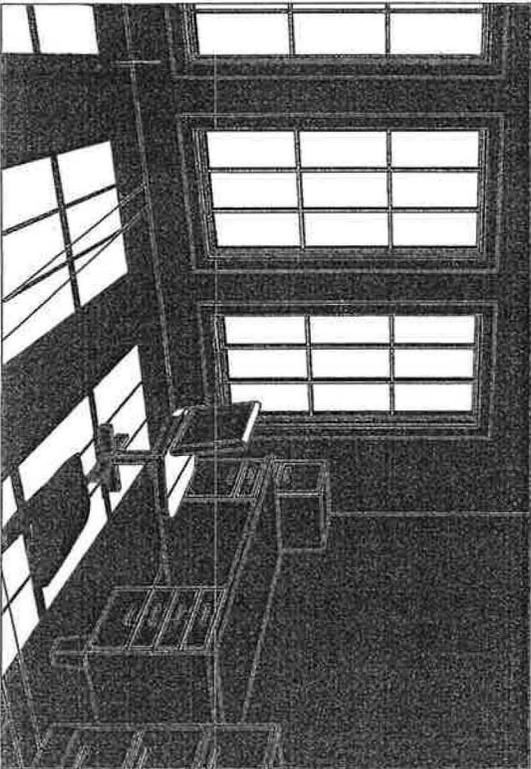
1 TO LIVING ROOM



2 TV ROOM



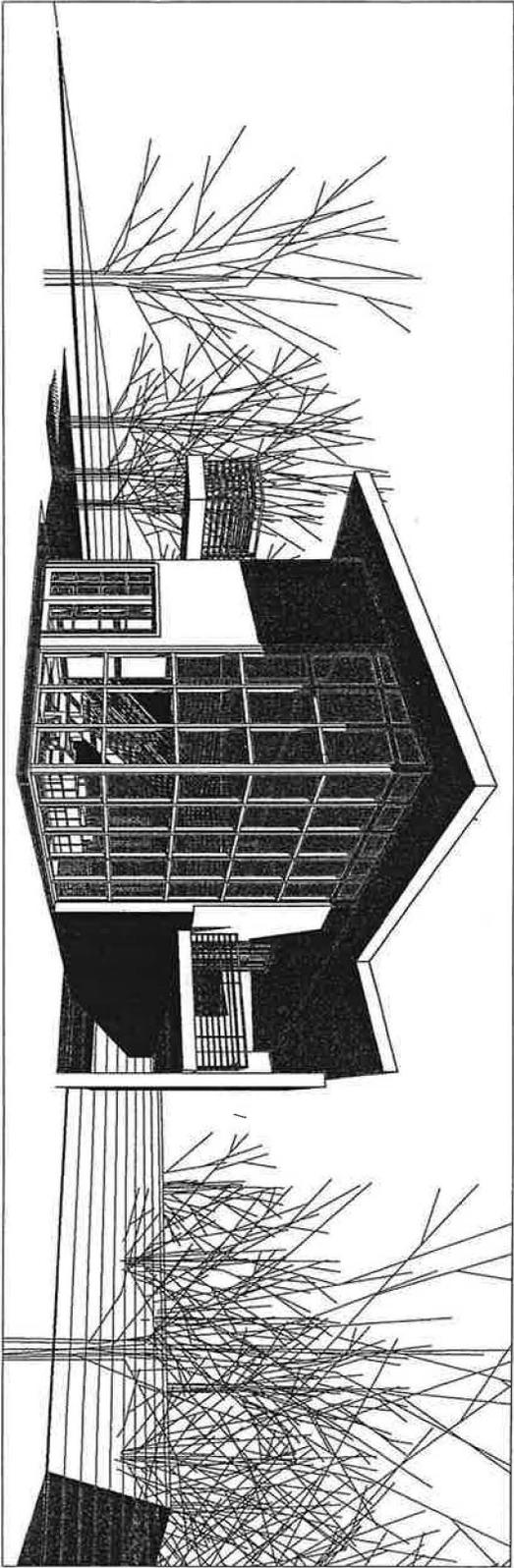
4 FROM LIVING ROOM



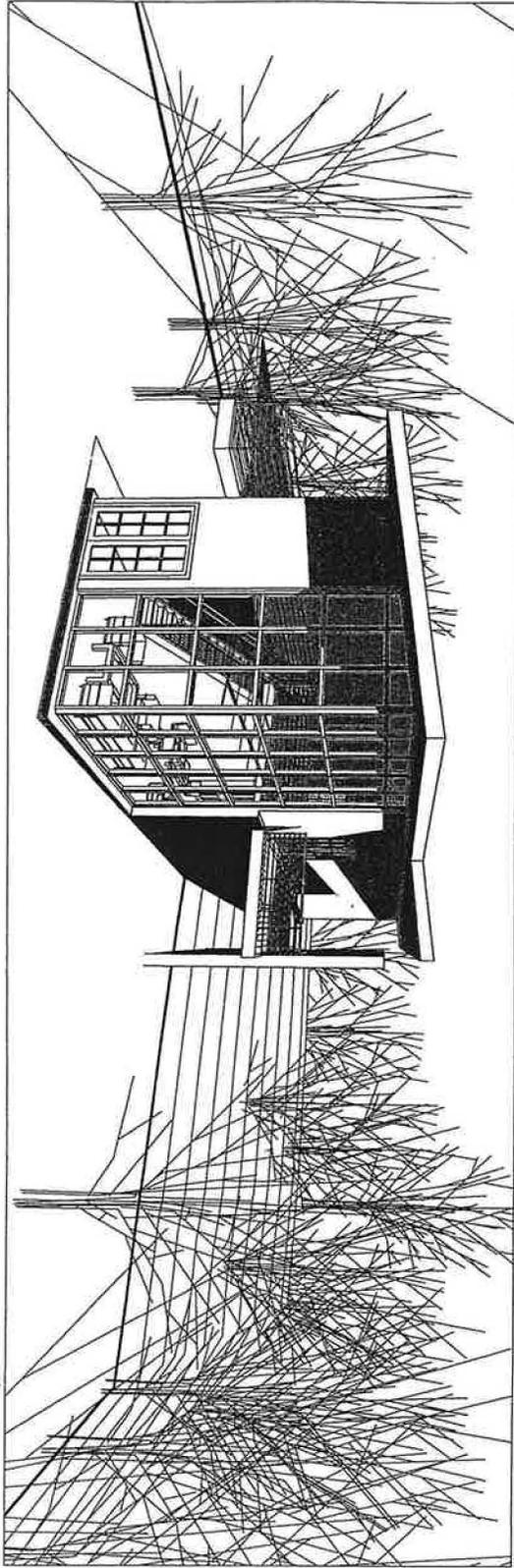
3 MAIN ROOM

Issue Date: 11-21-07 Revision Date: 11-21-07 Scale: N/A Drawing Number: A-9 of 11	Project Name: <b>REVIT TUTORIAL- HOME</b> <small>Location: 2815 Walnut Creek Dr, Upland CA 91784</small>	<b>NEW MILLENIUM ARCHITECTS</b>	
	Drawing Title: <b>INTERIOR PERSPECTIVES</b>	1825 Rock River Rd Diamond Bar CA 91786	
	Drawing by: <b>JOSE ALEXANDER GOMEZ</b>	Tel: 909-723-3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>	

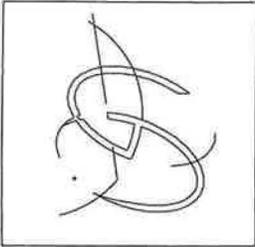
② EYE LEVEL VIEW



① BIRDS EYE VIEW



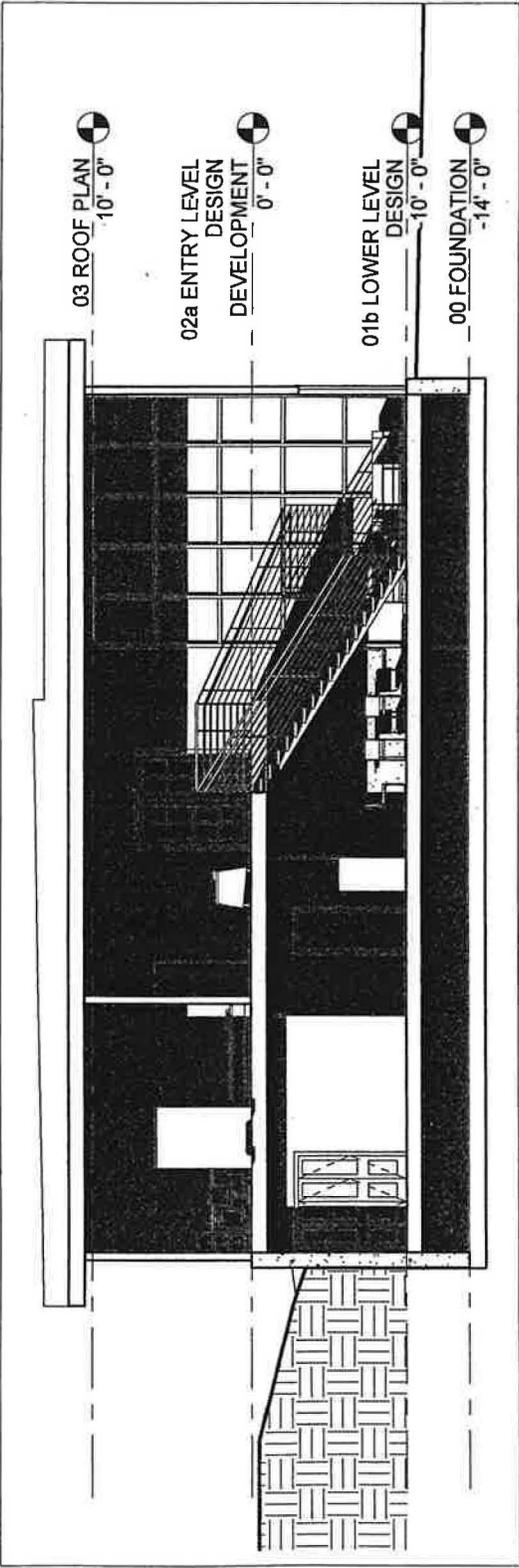
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	Revision Date: <b>11-21-07</b>	Drawing Title: <b>EXTERIOR PERSPECTIVES</b>		<b>NEW MILLENIUM ARCHITECTS</b>  1825 Rock River Rd Diamond Bar CA 91765
	Scale: N/A	Drawing by: <b>JOSE ALEXANDER GOMEZ</b>		Tel: 909-723-3959 <a href="http://www.newmilleniumarch.com">www.newmilleniumarch.com</a>



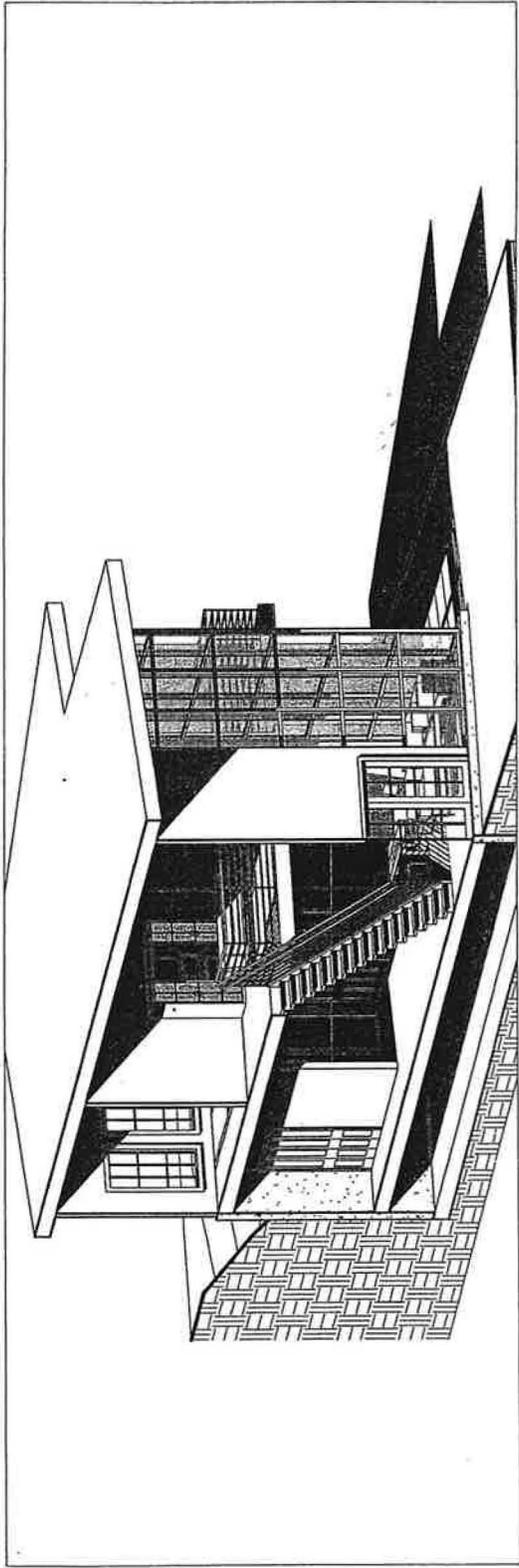
**NEW MILLENNIUM ARCHITECTS**  
Location: 2015 Walnut Creek Dr, Ukiah CA 95706  
Drawing Title: **SECTIONS 2D-3D**  
1825 Rock River Rd  
Diamond Bar CA 91765  
Tel: 909-723-3959  
www.newmilleniumarch.com

Project Name: **REVT TUTORIAL-HOME**  
Drawing by: **JOSE ALEXANDER GOMEZ**

Issue Date:	12-03-07
Revision Date:	12-03-07
Scale:	N/A
Drawing Number:	<b>A-11</b> of 11

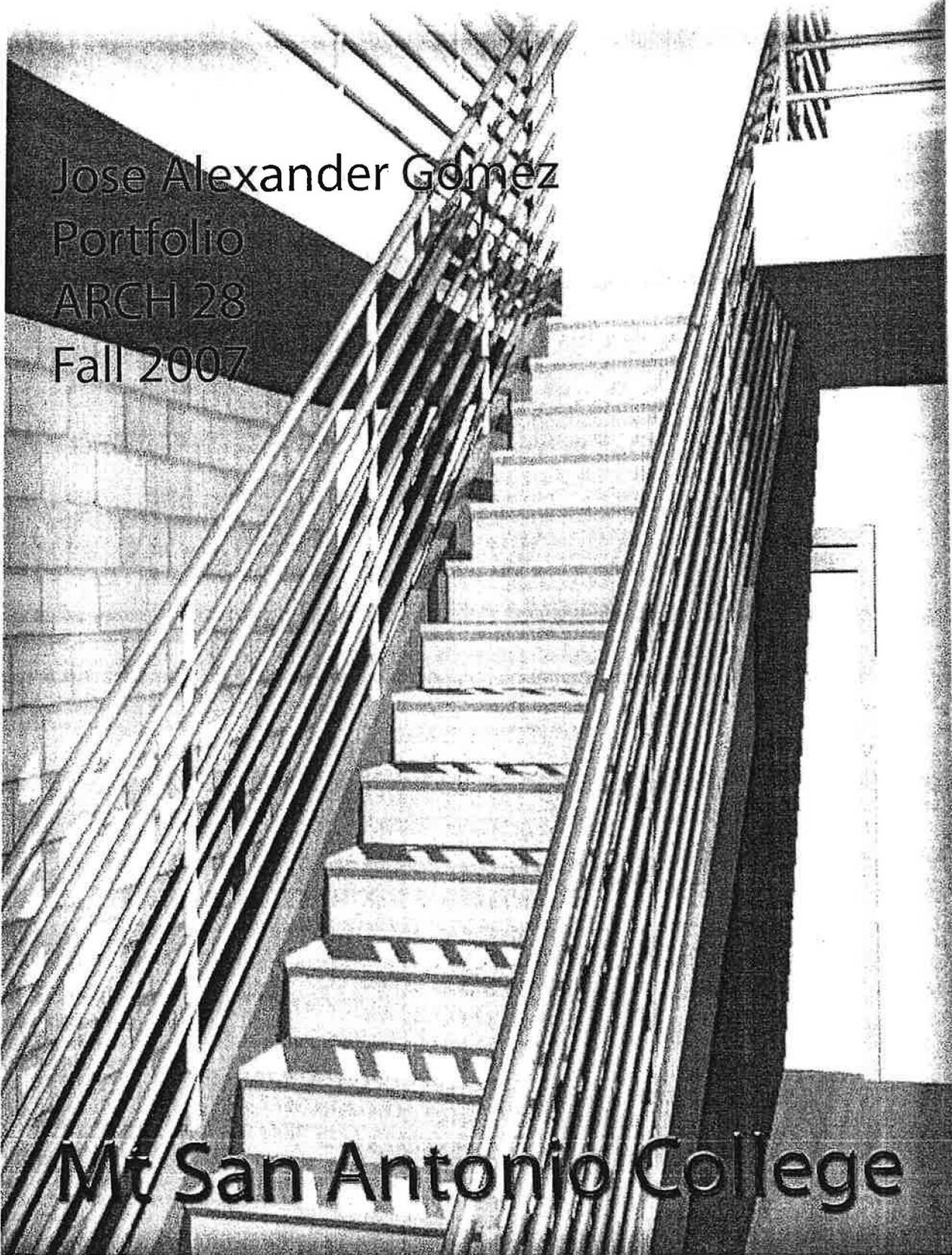


① 2D SECTION  
1/8" = 1'-0"



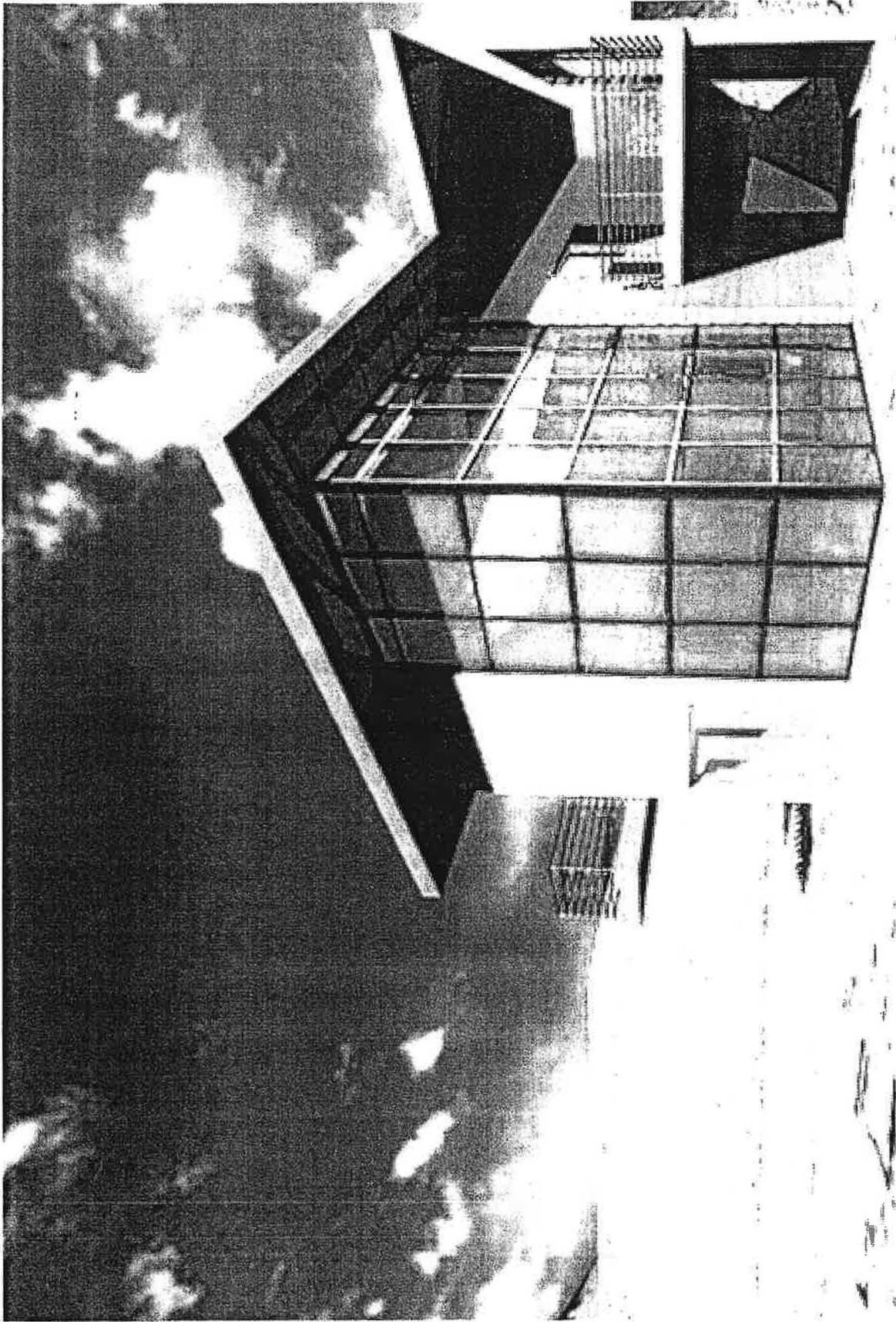
② 3D SECTION

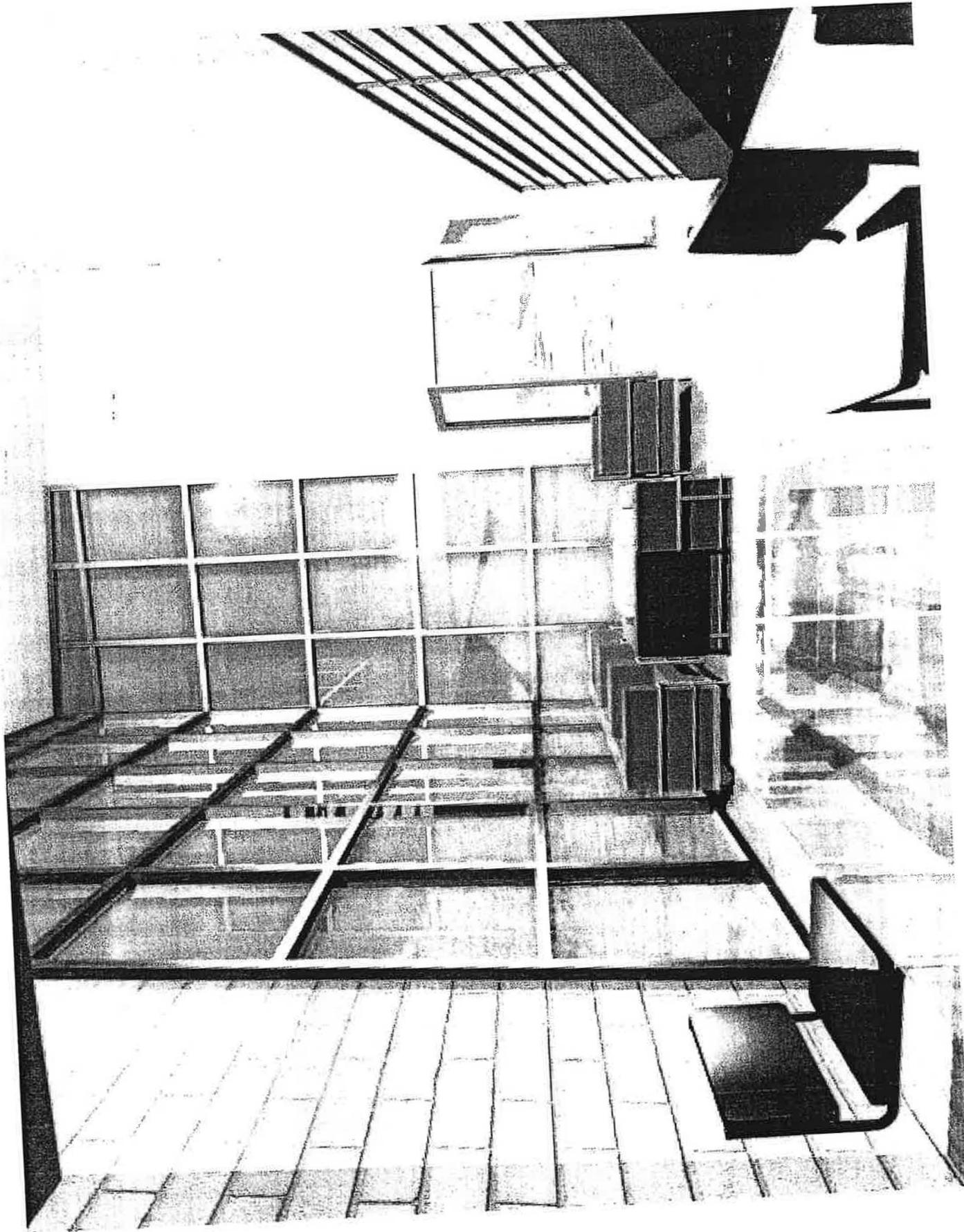


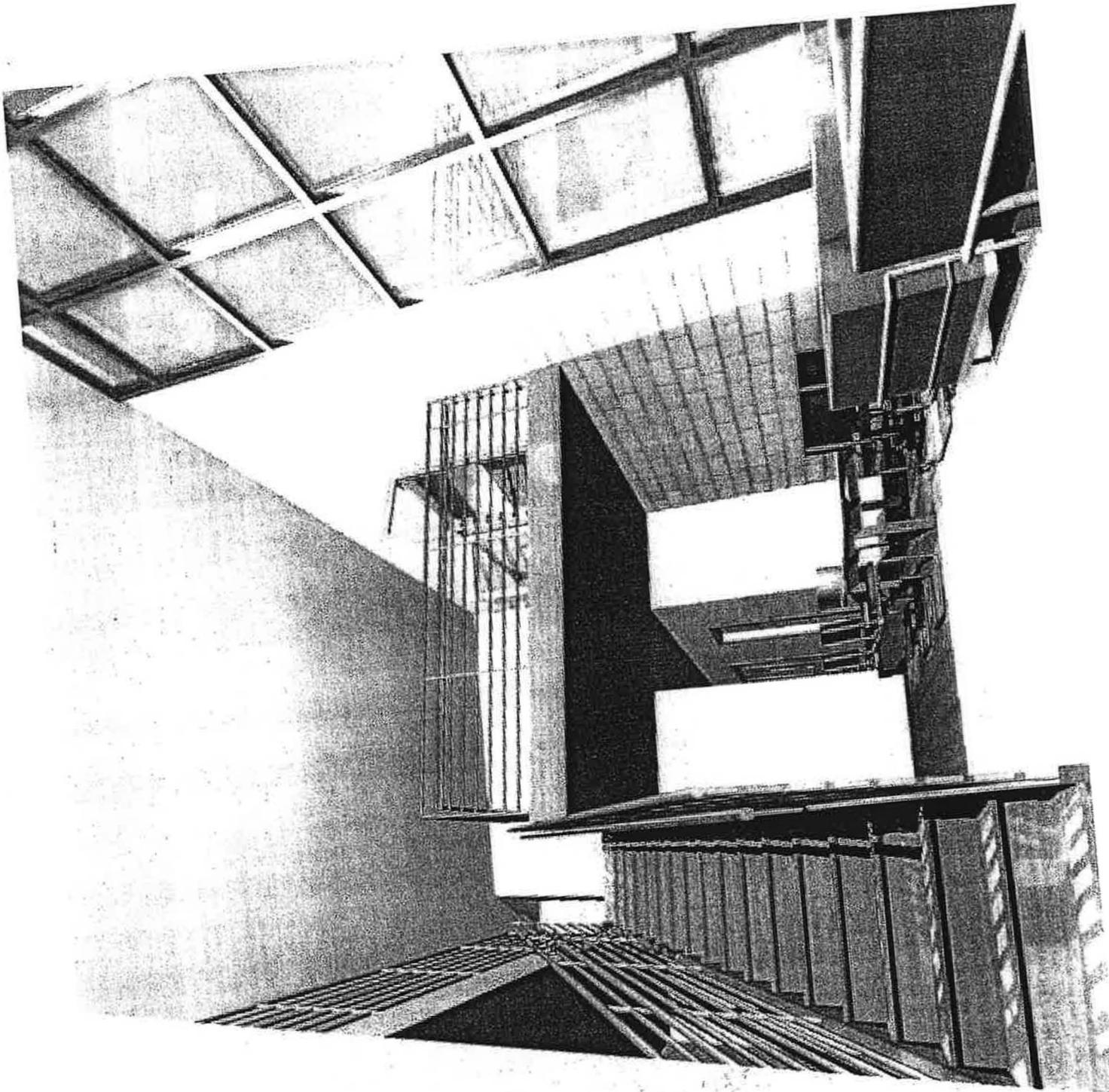


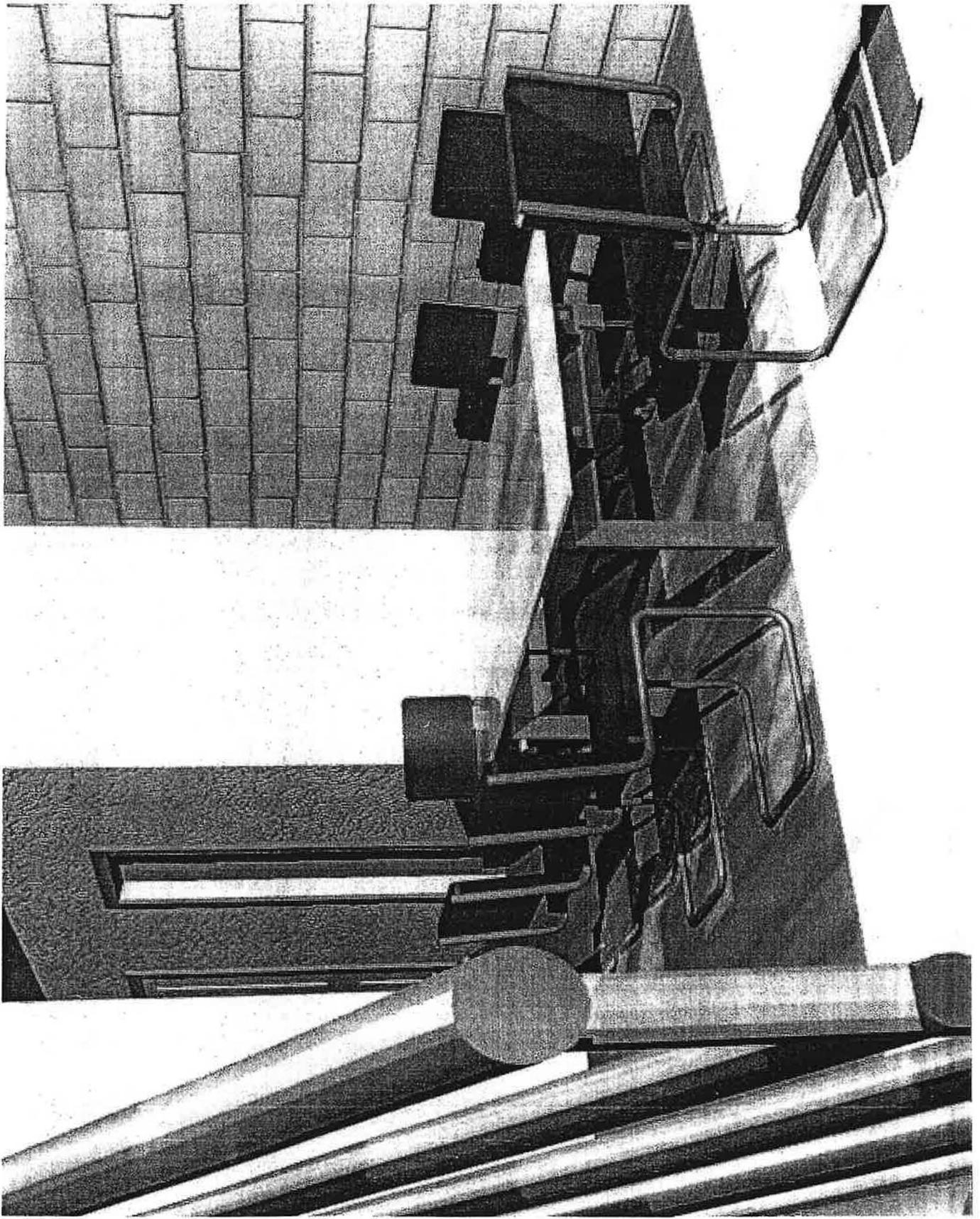
Jose Alexander Gomez  
Portfolio  
ARCH 28  
Fall 2007

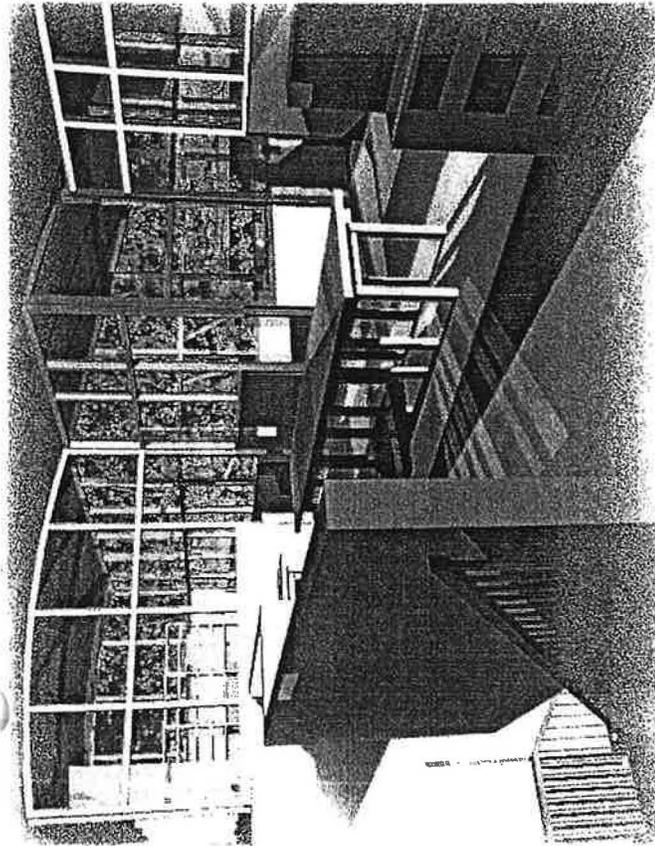
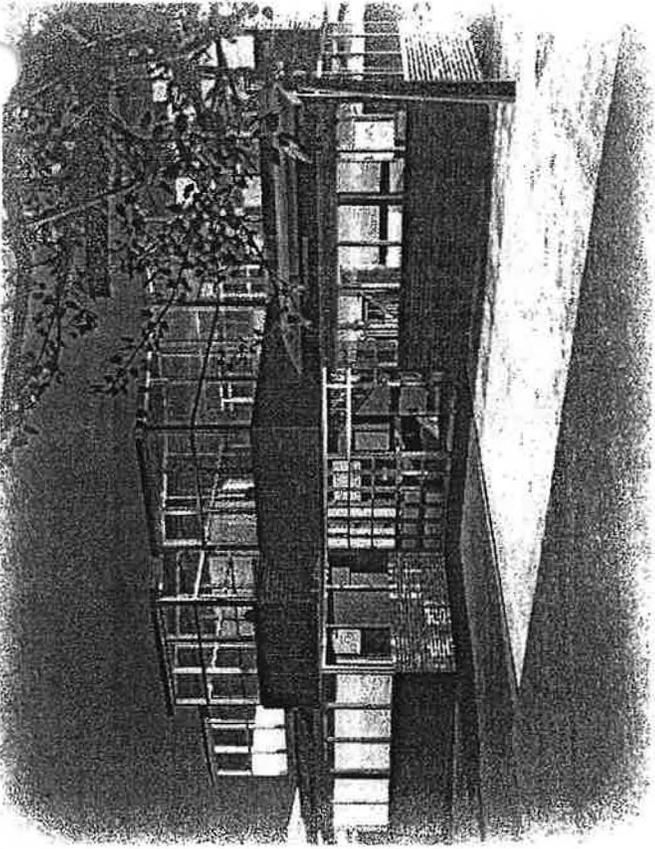
Mt San Antonio College



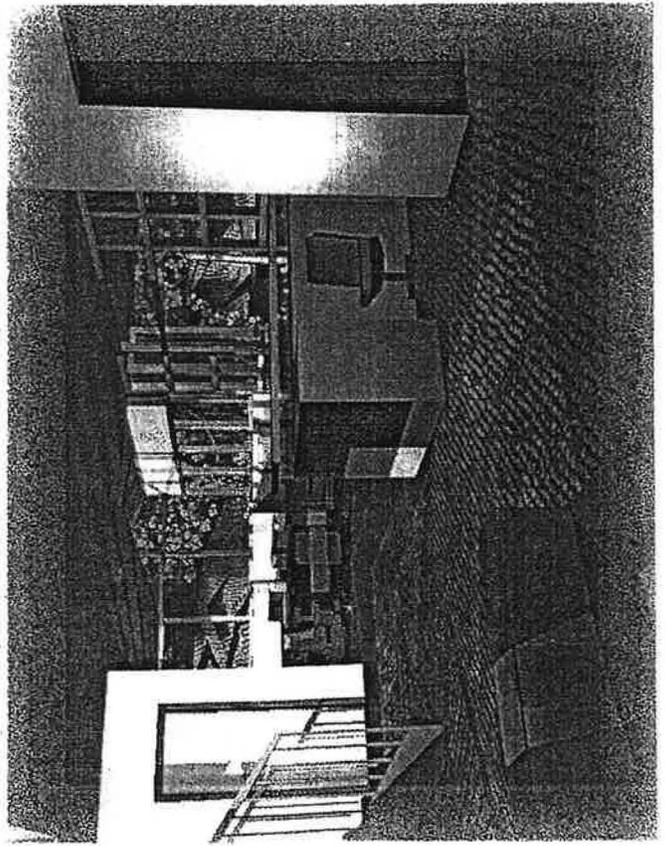








# ARCH 28 CAD 3-D ILLUSTRATION / ANIMATION



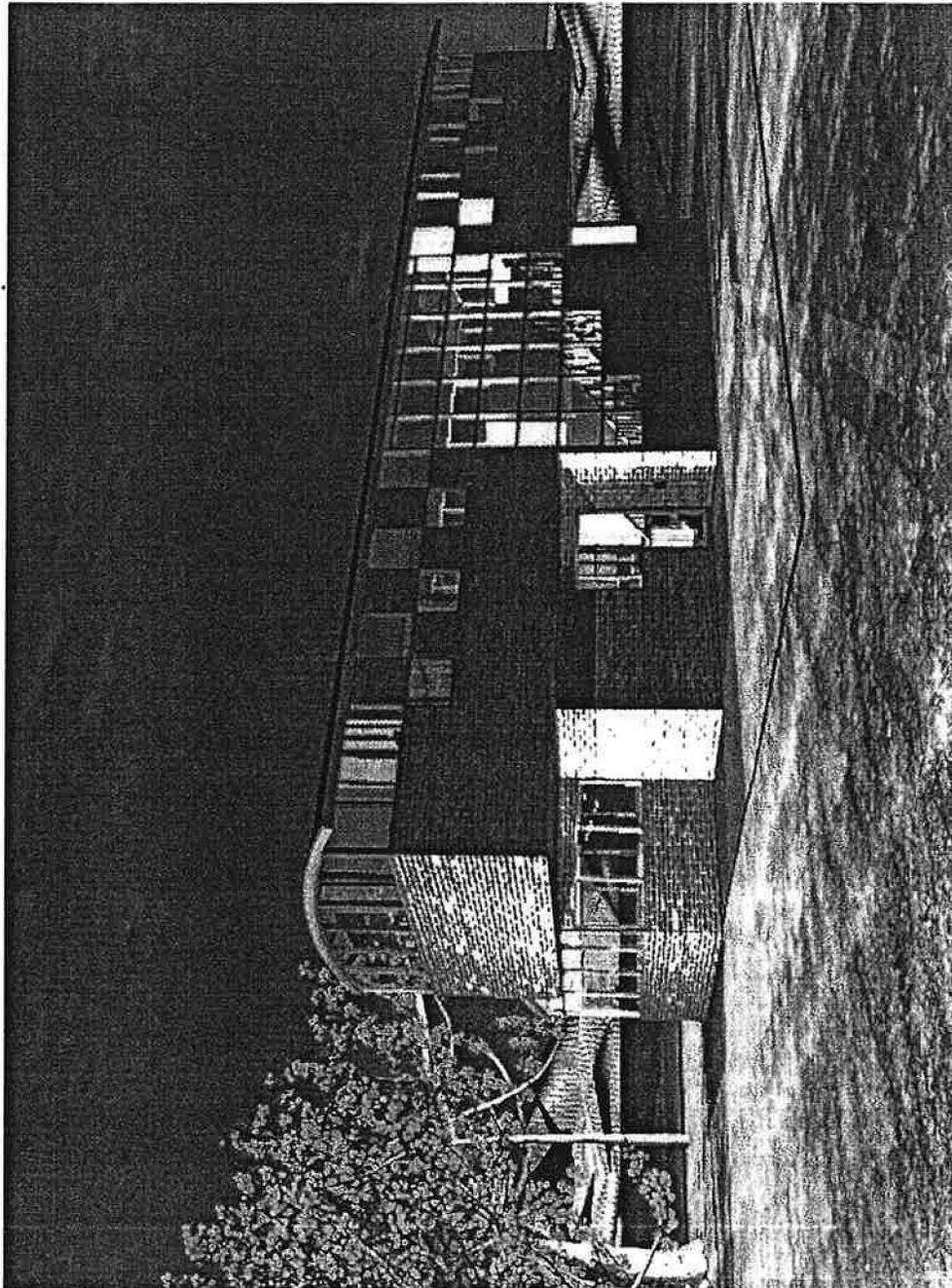
MT. SAC FALL 2007  
PROFESSOR: HO, R.  
MAX LANG



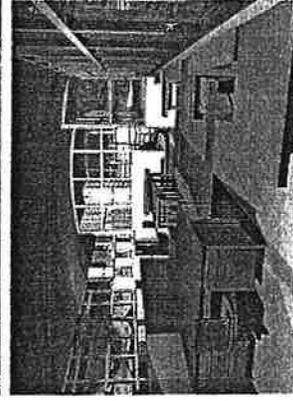
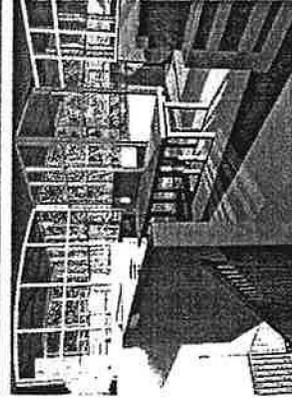
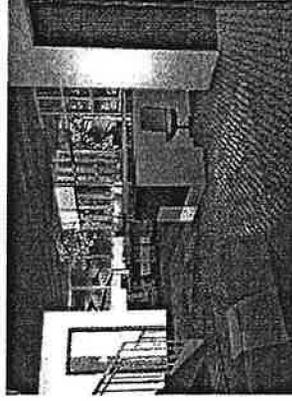
EXTERIOR VIEW FROM NORTHWEST



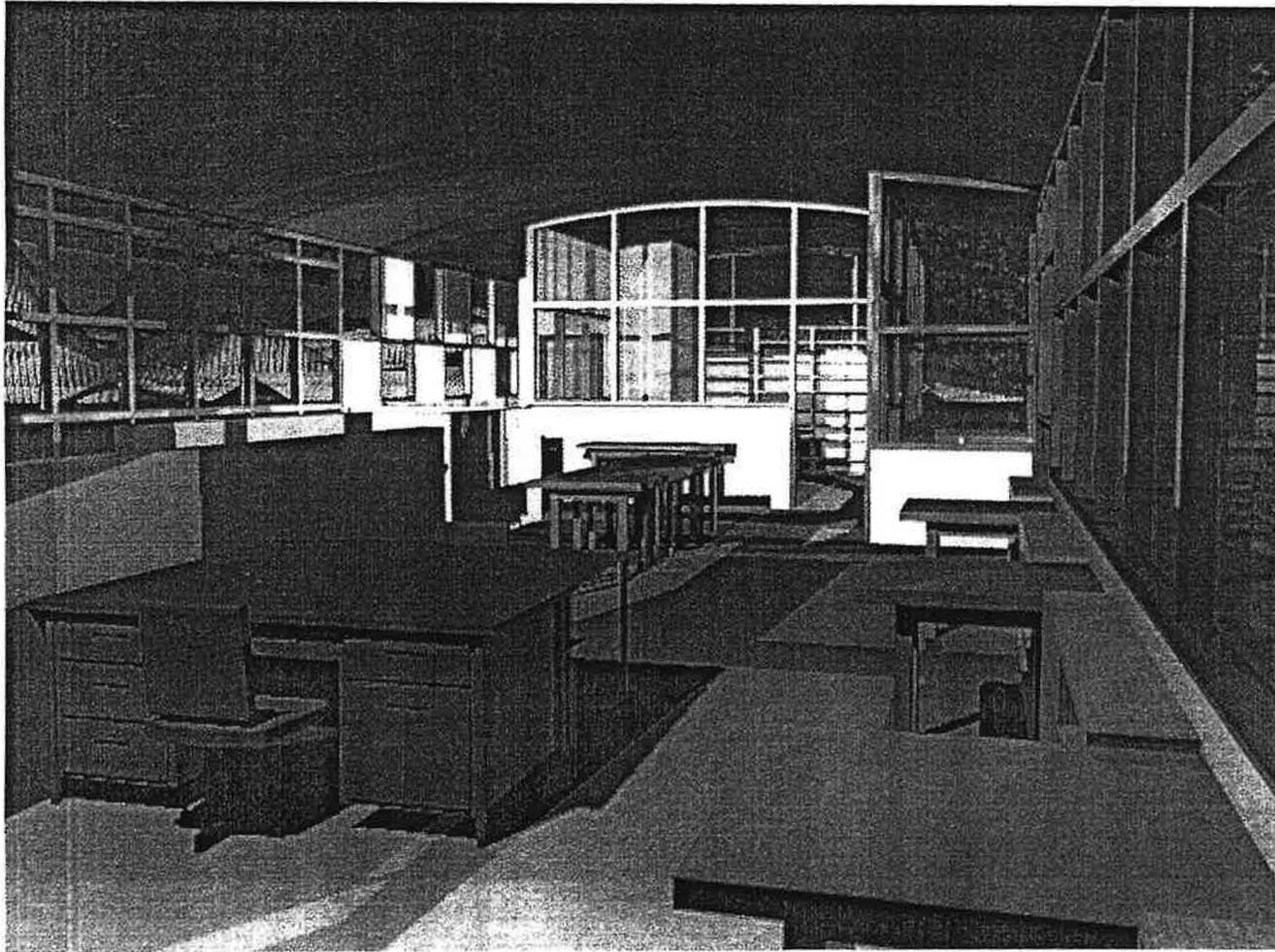
ARCH 28 CAD 3-D ILLUSTR/ANIMATION  
PROFESSOR: HO, R.  
FALL 2007  
MAX LANG



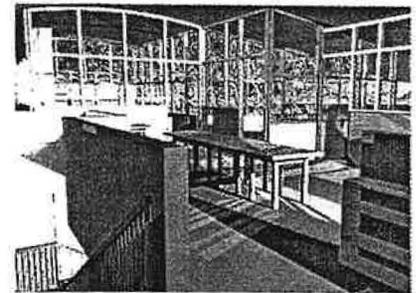
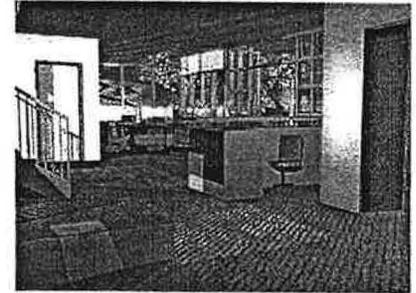
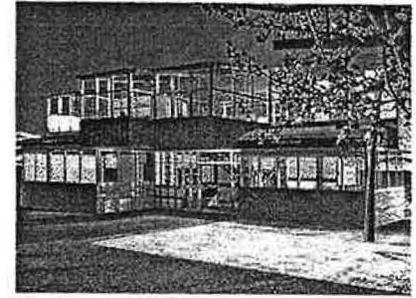
EXTERIOR VIEW FROM SOUTHWEST (REAR VIEW)



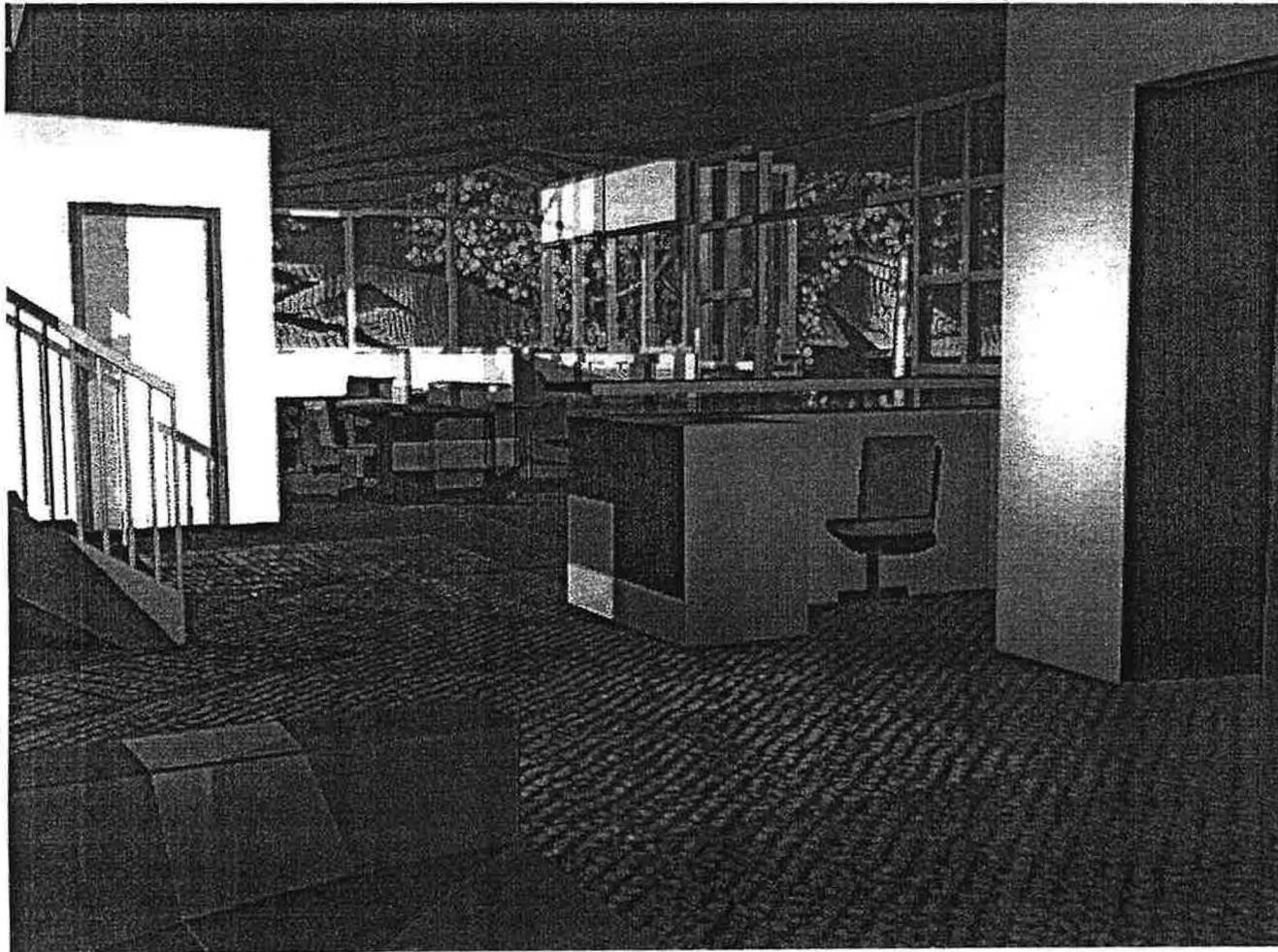
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PROFESSOR: HO, R., S.  
FALL 2007  
MAX LANG



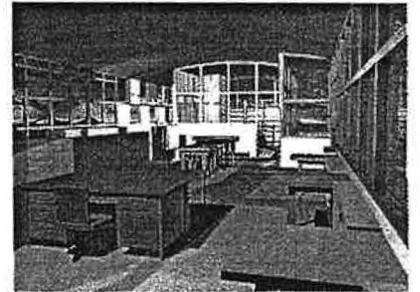
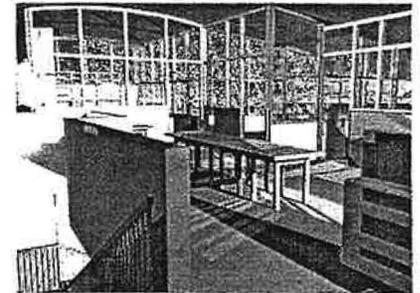
SECOND FLOOR LOOKING INTO OFFICES, CONFERENCE ROOM AND REAR WALL FROM WORKING STATION



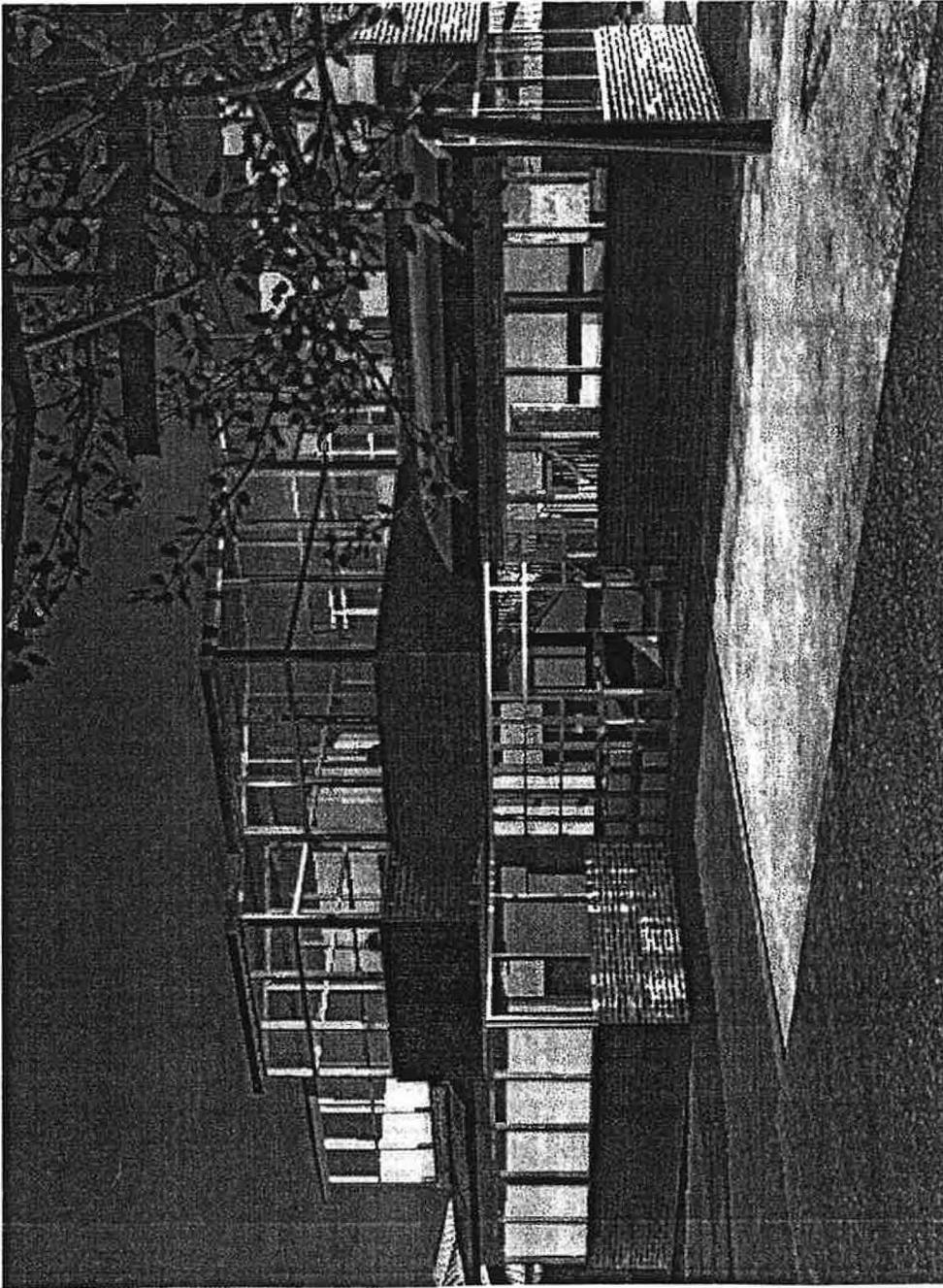
ARCH 28 CAD 3-D ILLUSTR/ANIMATION  
PROFESSOR: HO, R.  
FALL 2007  
MAX LANG



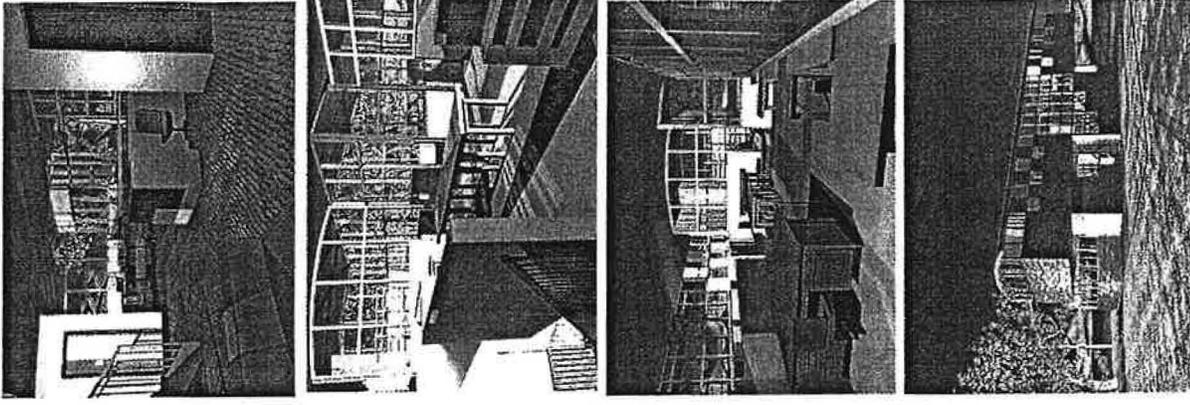
FIRST FLOOR WAITING AREA LOOKS INTO WORKING STATIONS



ARCH 28 CAD 3-D ILLUSTR/ANIMATION  
PROFESSOR: HO, R.  
FALL 2007  
MAX LANG



EXTERIOR VIEW FROM NORTHWEST



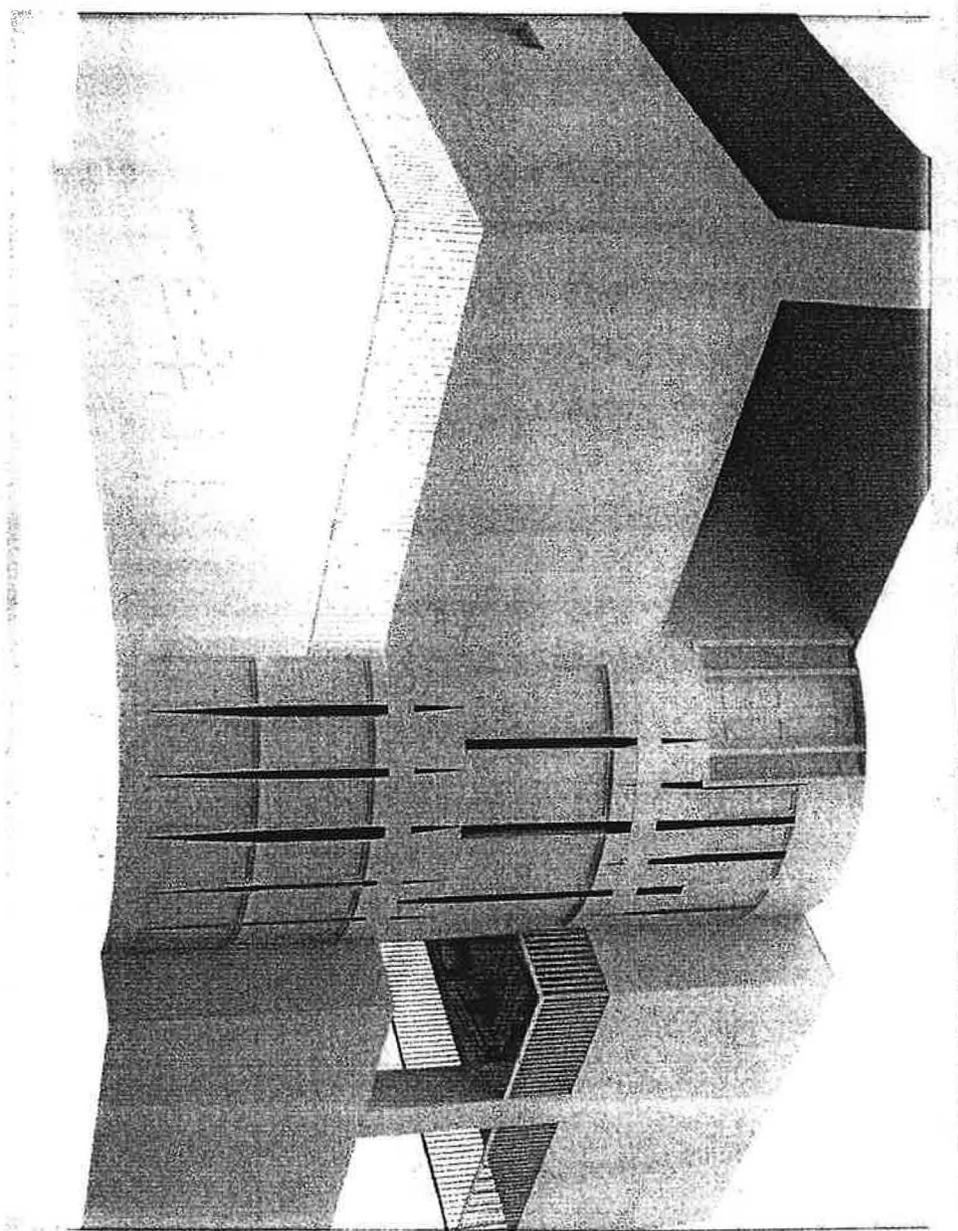
ARCH 28 CAD 3-D ILLUSTRATION/ANIMATION  
PROFESSOR: HO, R.<sup>38</sup>  
FALL 2007  
MAX LANG

# ARCH 21 = Design II

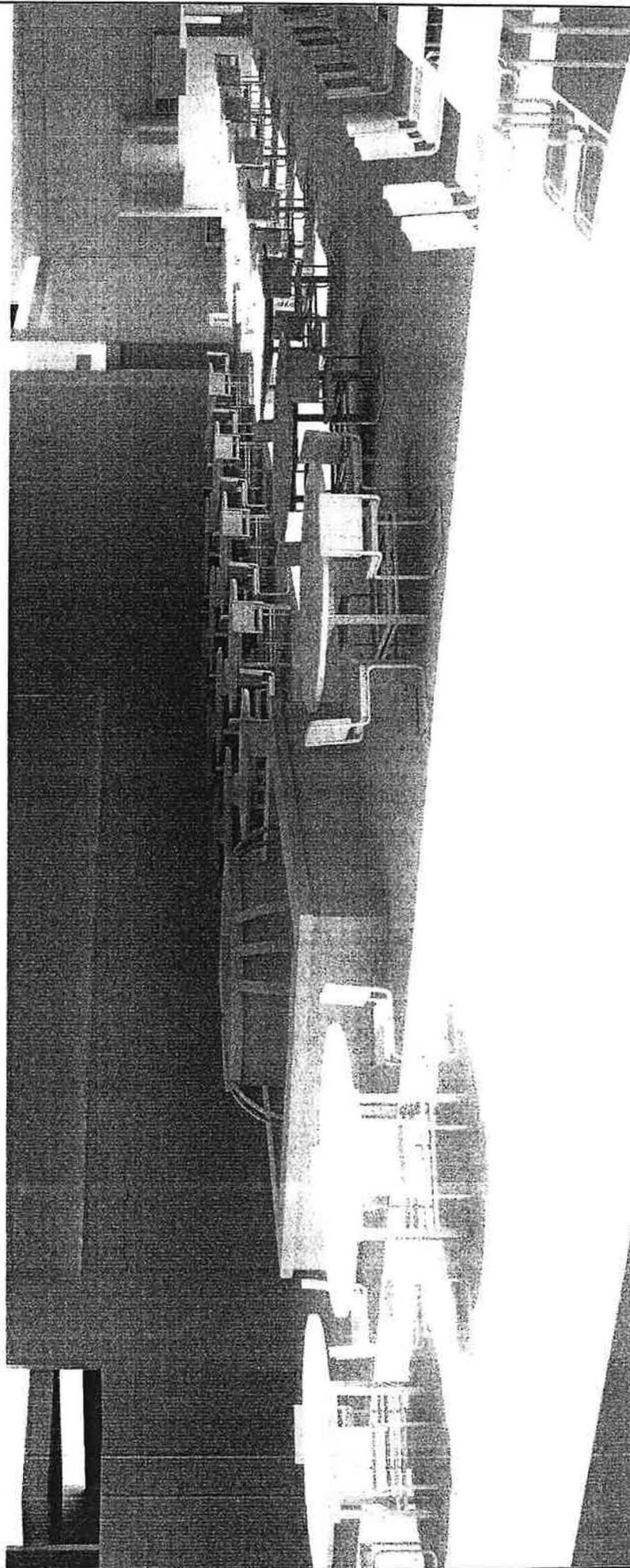
Jean Pierre Cuba

Fall 07

# Project I



# Project II







## Appendix - F

### Selected Photos from Internet article "10 Wonders of the New China"

INTERNATIONAL DESIGN

## 10 Wonders of the New China

It's a hotbed of innovative architecture, from diaphanous theaters to buildings heated and cooled by water



China's current building boom is doing more than sucking up the world's supply of steel -- it's creating a stage for some of today's boldest architecture and engineering. Take a tour of the 10 of the most intriguing examples.

By [Reena Jana](#)

### 1. The Commune, Beijing

First phase completed 2002, expansion scheduled for completion in 2010



PHOTO: MA XIAOCHUN

Ho-Sabbatical-Report-2007-9

Ho-Sabbatical-Report-2007-12-31 (Revised 12/2007)

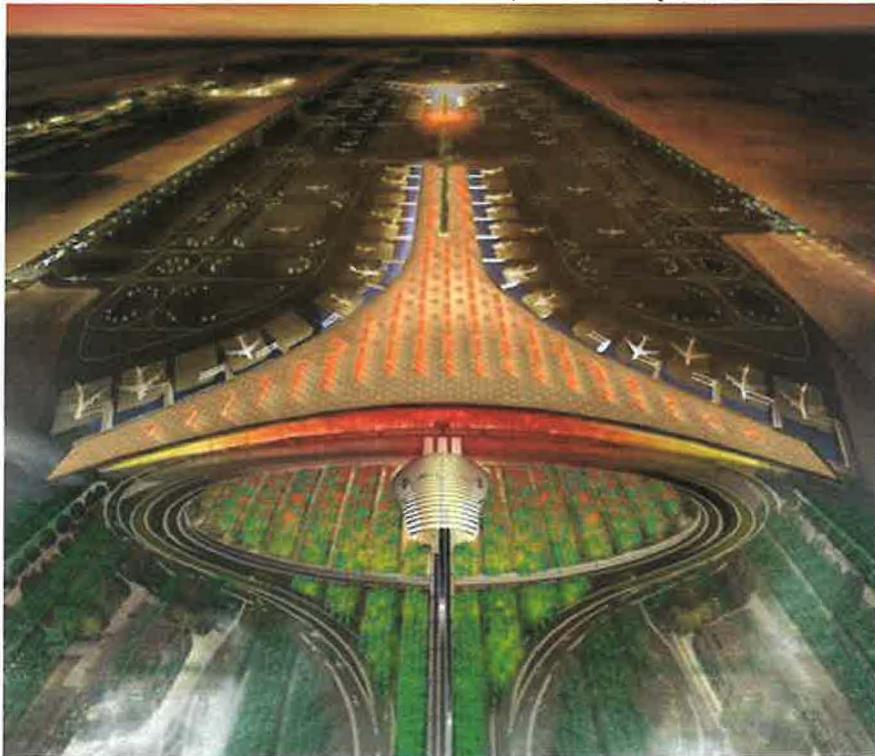
Page 122

Even if the Commune didn't sit beside that wonder of the ancient world, the Great Wall of China, it would still qualify as a wonder. The complex includes houses by 12 of Asia's leading architects. It was conceived by married real-estate developers Zhang Xin and Pan Shiyi, who gave each architect a \$1 million budget. Shigeru Ban, the Japanese architect most famous for the paper houses he designed for refugees of the Kobe earthquake, designed the Furniture House, featuring the laminated plywood typically used for modular furniture, and China's Yung Ho Chang created the Split House, which takes the idea of a boxy dwelling, slices it in half, and spreads it out like a fan.

The Commune is now operated as a boutique hotel by the Germany luxury hotel group Kempinski, which is responsible for an upcoming expansion, which will feature 21 homes (including replications of the originals). One element will remain untouched in the new development: the Commune's private pedestrian trails, which trace untouched sections of the Great Wall.

## 2. Beijing International Airport, Beijing

Foster & Partners. Under construction, to be completed in late 2007



According to the U.S. Embassy to China, the country will be building 108 new airports between 2004 and 2009 -- including what will be the world's largest: the Beijing International Airport, designed by Foster & Partners. Set to open at the end of 2007, in time for the Beijing Olympics in 2008, the airport terminal will cover more than 1 million square meters, giving it a bigger footprint than the Pentagon.

It's designed to handle 43 million passengers a year initially and 55 million by 2015, figures that will probably push the new facility into the ranks of the top 10 busiest airports, going by the 2004 numbers from the Airports Council International. Given the scale and traffic, Foster & Partners focused on the traveler's experience, making sure that walking distances are short, for instance.

Building on Foster's experience designing Hong Kong's new mega-airport, the massive Chek Lap Kok, the sprawling Beijing terminal is housed under a single roof. To help passengers distinguish between different sections of the vast space, skylights cast different shades of yellow and red light across walls -- a subtle but innovative navigational aid. The architects also kept sustainability in mind: An environmental-control system reduces carbon emissions, and skylights situated on a south-east axis lessen solar heat, keeping the building cool.

### 3. Shanghai World Financial Center, Shanghai

Kohn Pedersen Fox Architects. Under construction, completion scheduled for 2008



Rising in the Lujiazui financial district in Pudong, the Shanghai World Financial Center is a tower among towers. The elegant 101-story skyscraper will be (for a moment, at least) the world's tallest when completed in early 2008.

One of the biggest challenges of building tall is creating a structure that can withstand high winds. The architects devised an innovation solution to alleviate wind pressure by adding a rectangular cut-out at the building's apex. Not only does the open area help reduce the building's sway but it also will be home to the world's highest outdoor observation deck – a 100th-floor vista that will take vertigo to new heights.

## 4. National Swimming Center, Beijing

PTW and Ove Arup. Under construction, completion scheduled for 2008



The striking exterior of the National Swimming Center, being constructed for the 2008 Olympic Games and nicknamed, the "Water Cube," is made from panels of a lightweight form of Teflon that transforms the building into an energy-efficient greenhouse-like environment. Solar energy will also be used to heat the swimming pools, which are designed to reuse double-filtered, backwashed pool water that's usually dumped as waste.

Excess rainwater will also be collected and stored in subterranean tanks and used to fill the pools. The complex engineering system of curvy steel frames that form the structure of the bubble-like skin are based on research into the structural properties of soap bubbles by two physicists at Dublin's Trinity College. The unique structure is designed to help the building withstand nearly any seismic disruptions.

## 5. Central Chinese Television CCTV, Beijing

OMA/Ole Scheeren and Rem Koolhaas. Under construction, scheduled for completion in 2008

Original birds-eye view image removed due to OMA image copy-right notice  
(unable to obtain permission)



The design of the new Central Chinese Television (CCTV) headquarters defies the popular conception of a skyscraper – and it broke Beijing's building codes and required approval by a special review panel. The standard systems for engineering gravity and lateral loads in buildings didn't apply to the CCTV building, which is formed by two leaning towers, each bent 90 degrees at the top and bottom to form a continuous loop.

The engineer's solution is to create a structural "tube" of diagonal supports. The irregular pattern of this "diagrid" system reflects the distribution of forces across the tube's surface. Designed by Rem Koolhaas and Ole Scheeren and engineered by Ove Arup, the new CCTV tower rethinks what a skyscraper can be.

## 6. Linked Hybrid, Beijing

Steven Holl Architects; Li Hu, lead architect. Groundbreaking on December 28, 2005, scheduled for completion in 2008



Linked Hybrid, which will house 2,500 people in 700 apartments covering 1.6 million square feet, is a model for large-scale sustainable residential architecture. The site will feature one of the world's largest geothermal cooling and heating systems, which will stabilize the temperature within the complex of eight buildings, all linked at the 20th floor by a "ring" of service establishments, like cafés and dry cleaners. A set of dual pipes pumps water from 100 meters below ground, circulating the liquid between the buildings' concrete floors.

The result: The water-circulation system serves as a giant radiator in the winter and cooling system in the summer. It has no boilers to supply heat, no electric air conditioners to supply cool. The apartments also feature gray-water recycling -- a process that's just starting to catch on in Beijing in much smaller buildings -- to filter waste water from kitchen sinks and wash basins back into toilets.

## 7. Dongtan Eco City, Dongtan

Masterplan by Arup, for the Shanghai Industrial Investment Corp. In planning stages, first phase to be completed in 2010



Developed by the Shanghai Industrial investment Corp., Dongtan Eco City, roughly the size of Manhattan, will be the world's first fully sustainable cosmopolis when completed in 2040. Like Manhattan, it's situated on an island -- the third-largest in China. Located on the Yangtze River, Dongtan is within close proximity of the bustle of Shanghai.

By the time the Shanghai Expo trade fair opens in 2010, the city's first phase should be completed, and 50,000 residents will call Dongtan home-sweet-sustainable-home. The goals to be accomplished in the next five years: systems for water purification, waste management, and renewable energy. An infrastructure of roads will connect the former agricultural land with Shanghai.

## 8. Olympic Stadium, Beijing

Herzog & de Meuron. Under construction, to be completed in 2008

**Original birds-eye view image removed due to  
HERZOG and DEMEURON image copy-right notice  
(unable to obtain permission)**

IMAGE © HERZOG AND DE MEURON

Sports stadiums have long followed the enduring design of one of the original wonders of the world, Rome's Coliseum. Herzog & de Meuron's National Stadium in Beijing is an attempt to rethink the classic sports-arena layout for more ecologically correct times.

The Swiss architects (of Tate Modern fame) wanted to provide natural ventilation for the 91,000-seat structure -- perhaps the largest "eco-friendly" sports stadium designed to date. To achieve this, they set out to create a building that could function without a strictly enclosed shell, yet also provide constant shelter for the audience and athletes alike.

To solve these design problems, they looked to nature for inspiration. The stadium's outer grid resembles a bird's nest constructed of delicately placed branches and twigs. Each discrete space within the facility, from restrooms to restaurants, is constructed as an independent unit within the outer lattice -- making it possible to encase the entire complex with an open grid that allows for natural air circulation. The architects also incorporated a layer of translucent membrane to fill any gaps in the lacy exterior.

## 9. Donghai Bridge, Shanghai/Yangshan Island

China Zhongtie Major Bridge Engineering Group, Shanghai # 2 Engineering Co.,  
Shanghai Urban Construction Group. Officially opened in December, 2005



PHOTO: GETTY IMAGES

A key phase in the development of the world's largest deep-sea port was completed when China's first cross-sea bridge -- the 20-mile, six-lane Donghai Bridge -- was officially opened in December, 2005. Stretching across the East China Sea, the graceful cable-stay structure connects Shanghai to Yangshan Island, set to become China's first free-trade port (and the world's largest container port) upon its completion in 2010.

To provide a safer driving route in the typhoons and high waves known to hit the region, Donghai Bridge is designed in an S-shape. The structure, reported by *Shanghai Daily* to have cost \$1.2 billion, will hold its title of China's -- and one of the world's -- longest over-sea bridge for only a couple of years, though. In 2008, the nearby 22-mile Hangzhou Bay Transoceanic Bridge, which also begins (or ends, depending on your journey) in Shanghai, will earn the superlative.

## 10. National Grand Theater, Beijing

Paul Andreu and ADP. Under construction, to be completed in 2008

**Original birds-eye view image removed due to  
WXYZ image copy-right notice  
(unable to obtain permission)**

IMAGE © WXYZ

Located near Tiananmen Square, the 490,485-square-foot glass-and-titanium National Grand Theater, scheduled to open in 2008, seems to float above a man-made lake. Intended to stand out amid the Chinese capital's bustling streets and ancient buildings, the structure has garnered criticism among Beijing's citizens for clashing with classic landmarks like the Monument to the People's Heroes (dedicated to revolutionary martyrs), the vast home of the National People's Congress, or Tiananmen Gate itself (the Gate of Heavenly Peace).

French architect Paul Andreu is no stranger to controversy -- or to innovative forms. A generation ago, in 1974, his untraditional design for Terminal 1 of Paris's Charles de Gaulle airport was criticized for its unusual curves, yet Andreu's groundbreaking, futuristic building later was seen to distinguish de Gaulle from more generic European and international air hubs. (The same airport's Terminal 2E, also designed by Andreu, gained attention in 2004 when it collapsed, tragically killing four people.)

Beijing's daring National Grand Theater is as much a spectacle as the productions that will be staged inside in the 2,416-seat opera house, the 2,017-seat concert hall, and the 1,040-seat theater. At night, the semi-transparent skin will give passersby a glimpse at the performance inside one of three auditoriums, a feature that highlights the building's public nature.

## **Appendix - G**

### **Revit Interoperability with CAD**

# Revit Interoperability with CAD

Autodesk® Revit® is a complete architectural design and documentation solution, supporting all phases of design and all architectural drawings and schedules required for a building project. From massing and conceptual studies through the most detailed construction drawings and schedules, Autodesk Revit has tools for delivering productivity, coordination, and quality to the building team.

Autodesk Revit can be used alone or in conjunction with AutoCAD®. This guide will help those who are familiar with AutoCAD to understand how Autodesk Revit works, introducing some of the main features and concepts of Autodesk Revit and comparing them with similar features of AutoCAD.

This guide also demonstrates how you can use Autodesk Revit with AutoCAD to manage a project and its deliverables. You'll learn how to integrate existing AutoCAD projects with Autodesk Revit to produce construction documents. The process relies on the export compatibility of Autodesk Revit and the external referencing capabilities of AutoCAD.

Autodesk Revit provides DWG compatibility using the Autodesk ObjectDBX™ toolkit, and works with AutoCAD to ensure clear communication of design data among project teams.

# Features of Autodesk Revit

## True 3D Design

Using Autodesk Revit, you work with architectural models rather than geometry. With Autodesk Revit, you can switch among views and schedules as you like. Because you create a parametric building model, dependencies are automatically updated as you make changes.

## Parametric Objects

Autodesk Revit contains 3D parametric building elements, which carry information about their relationships to other objects in the building, in contrast with the blocks and solids used in AutoCAD. For example, in Autodesk Revit, the properties of a wall can state that it should rise to the next level or roof. After you specify this property, the wall retains its relationship to the next level or roof regardless of other changes you may make in the building.

Dimensions correspond to the actual size of building elements. Updating a dimension updates the parametric components and their relationships to other components. Locking a dimension allows you to embed your design intent. After a dimension is locked, the dimensioned relationship is maintained. Dimensions in schedules behave in the same way: if you change width and height values in a schedule, the revised size is reflected in the elements of the model. Coordination of dimensions and graphics is assured throughout the project.

## Families vs. Blocks

AutoCAD users are accustomed to storing symbols in individual DWG files. With Autodesk Revit, you store similar parametric components in family files. Family files can contain many styles of components, providing easy organization and data sharing, and offer numerous placement options. You can customize family files; for example, you can modify alignment planes or add subcategories to objects. You can also create intelligent parametric objects or customize the ones included with Autodesk Revit.

## Alignment vs. Osnaps

Autodesk Revit offers sketching tools such as temporary dimensions and alignment guides. Alignment guides are similar to the object snap features in AutoCAD. Temporary line and arc extensions, and snap points relative to your current position, aid you as you design. With Autodesk Revit, you can place components and modify the design later. Doors open in the desired direction and windows are placed at the correct height on the wall. You can place components in either two-dimensional (2D) or three-dimensional (3D) views.

## Multiple Design Views

With Autodesk Revit you can work with components in any view, including schedules. Multiple views can be open at the same time, and changes made in one view are immediately updated in the others, making Autodesk Revit a valuable tool for experimenting with design changes. You can open plan and 3D views side by side, so that you can verify whether modifying a component on one level interferes with any design intent on another level.

## No Command Line or Layers

AutoCAD users will notice the absence of a command line and the layer control feature. In Autodesk Revit, building tools and components are presented on a Design Bar. The software is designed to look and work like other familiar Microsoft® Windows® applications. Visibility of components is controlled through the Visibility/Graphic Overrides feature, which works on a per-view basis (comparable to the AutoCAD Freeze/Thaw by viewport feature). Color and linetype are also controlled by category. The display of components depends on the view in which they are seen. For example, components display only a footprint in plan view, while displaying all geometry in a 3D isometric view.

## Single File, Multi-User Projects

In Autodesk Revit, project data is stored in a single file, eliminating the need to work with external blocks and xrefs. Architects work in teams, with each assigned a specific functional area. This involves simultaneously working on and saving different portions of the project. Autodesk Revit projects can be subdivided into worksets. A workset is a collection of elements in the building that can be edited by one architect at a time.

## Parametric Relationships

By using the dimensioning and alignment locking features in Autodesk Revit, you can place building components in relation to others and keep them that way throughout the design. You can lock components together in more than one place to preserve wall alignments, room areas, or door and window placements, even as the model is being altered in other areas. Component relationships may be constrained or overridden at your discretion. Dimensions may be locked or editable while the parent objects behave accordingly. Because objects can be aligned and locked into place, repetitive editing commands are eliminated, allowing for faster work and fewer errors.

## Read/Write DWG

Autodesk Revit provides DWG compatibility using the Autodesk ObjectDBX™ toolkit. You can import and export models to DXF™ and DWG formats. When exporting, Autodesk Revit matches its components and their subcategories from the current view to AIA or user-defined layer names. You can also import these formats into 2D or 3D views, allowing for smooth coordination and exchange of information among team members.

## Producing Paper Drawings

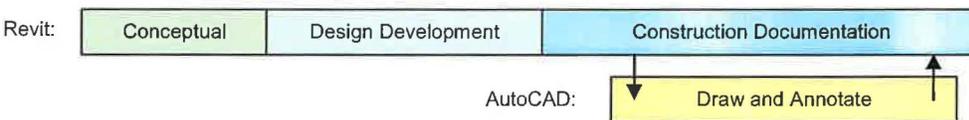
All drawings are produced from the single parametric building model used to create the design. Any changes to the design are updated in the drawing sheet views. Changes to elevations, sections, and callouts are immediately updated in all reflected views. Any view that you create can be added to a sheet and scaled. After you place the drawing on a sheet, you can perform last-minute placements just as easily in a sheet view as in a model view. Scale-dependent line weight and scale-independent annotation size allow you to reuse information in views without complex reformatting. The WYSIWYG display lets you see the final result before output, reducing plotting errors. Plotter hardware support in Autodesk Revit is limited only by the operating system. Autodesk Revit can use any Microsoft® Windows® driver available for your plotter.

# Using Autodesk Revit with AutoCAD

Here are the basic steps for using an Autodesk Revit project with AutoCAD:

1. Create the building model in Autodesk Revit.
2. Set up sheets for the project in Autodesk Revit.
3. Export selected views or sheets to DXF/DWG format for AutoCAD users.
4. Annotate the exported DXF/DWG files in AutoCAD by referencing the files.
5. Link any data created externally into Autodesk Revit as external reference files to keep data consistent.

Following is a workflow summary of tasks you'll perform as you work through a project using Autodesk Revit and AutoCAD:



### At Project Startup

- Set up the project in Autodesk Revit.
- Create any necessary building scale views.
- Define appropriate worksets.
- Begin modeling the building.
- Set up preliminary sheets in Autodesk Revit.

### During Design Phases

- Create any necessary enlarged scale views.
- Continue modeling the building.

- Create a "cartoon set" of sheets in Autodesk Revit.
- Set up folders for linked files to be exported to AutoCAD.

### At Start of Construction Documents

- Create any necessary detail views.
- Begin detailing the building.
- Determine what details to reuse from an existing library.
- Revise the cartoon set of sheets to include any additional sheets.
- Create a list of sheets to be worked on in AutoCAD.
- Export this list of sheets.
- Link any AutoCAD data into the appropriate Autodesk Revit views.

### At Conclusion of Construction Documents

- Archive the files created.

## Preparing for Data Export

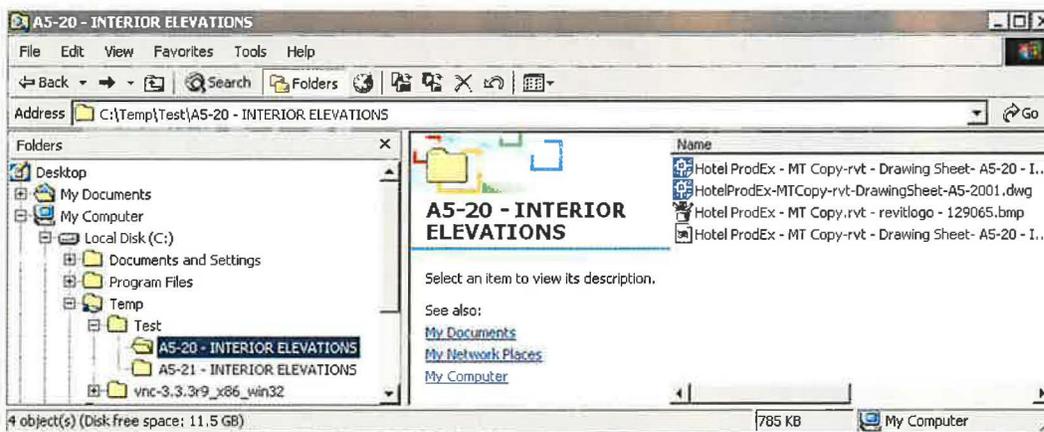
When preparing to export an Autodesk Revit model, you need to consider export methods, file naming conventions, data export options, and layering standards.

### Exporting Views or Sheets

You can export either views or sheets, depending on the scope of work to be done in AutoCAD, as well as the progress of construction documentation in Autodesk Revit.

Exporting a view creates a DWG or DXF file of the currently selected Autodesk Revit view. All external data linked to the view will be embedded as a block in DWG or DXF format. Use this method when you intend to annotate only selected views in AutoCAD.

Exporting an entire sheet from Autodesk Revit produces a set of DWG or DXF files. One file contains sheet information (borders, title block) with a viewport for each view. Each Autodesk Revit view becomes an individual file referenced into the sheet file and displayed in the appropriate viewport. All files are located in the same directory to facilitate tracking and management.



### Naming Conventions

To keep file names consistent throughout the project, use the Autodesk Revit default naming convention, as shown here:

### Exported Sheets

*[Project Filename]-[View Category]-[Sheet Number]-[Sheet Name].[Extension]*

## Exported Views (on sheets)

[Project Filename]-[Extension]-[View Category]-[Sheet Number]-[Sheet Name]-[View Identifier].[Extension]

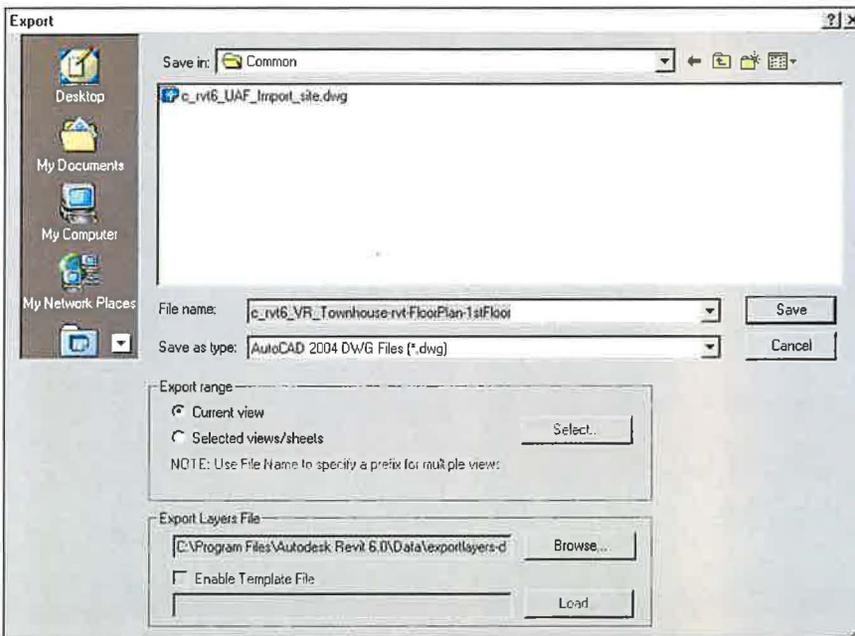
- **Project Filename:** Name of the Autodesk Revit file
- **Extension:** Standard Autodesk Revit file extension (*rvt*, *rft*, *rfa*), depending on the file open in Autodesk Revit
- **View Category:** Floor Plan, 3D View, Elevation, Section, Drafting View, or Drawing Sheet
- **Sheet Number:** Standard sheet number
- **Sheet Name:** Standard sheet name
- **View Identifier:** Standard view name
- **Extension:** Exported DWG or DXF, depending on user selection

## Data Export Options

The following options are available in the Export dialog box:

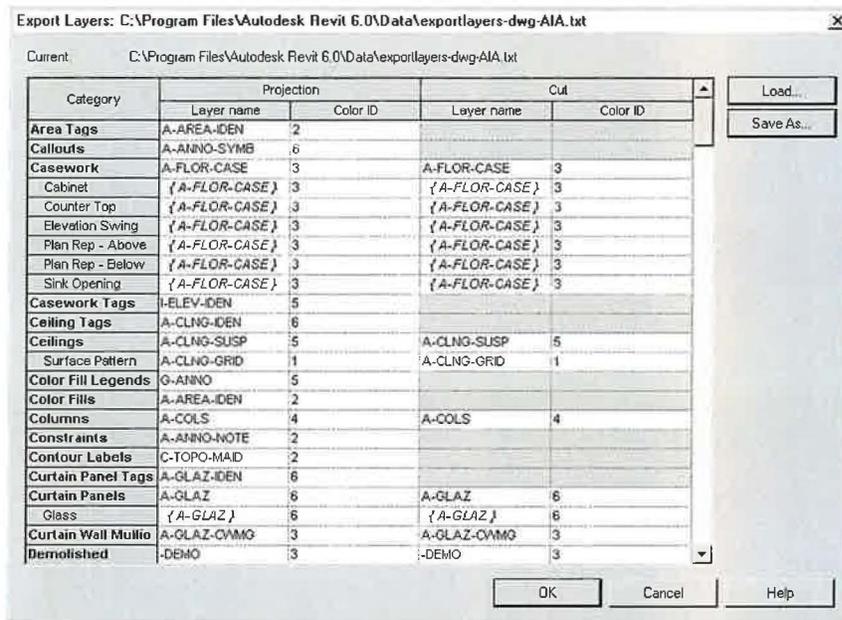
**Export Range:** Select either the current view or a set of views/sheets. The latter facilitates a batch-like export of a range of views.

**Export Layers File:** The file displayed by default is the current export layer standard. You can select a different export standard if you wish.



## Layering Standards

In the Export Layers dialog box, categories and subcategories of Autodesk Revit host components are mapped to a layer name and color number for use in a DWG or DXF file, using settings specified in special text files in the *Revit\Data* directory. By default, Autodesk Revit uses the last-specified export layer standard. The software supplies files for the AIA, BS1192, ISO 13567, and CP 83 standards. You can select from these or create custom standards.



You can incorporate custom office-dependent layering standards into the workflow and apply them to external files. This helps to ensure data consistency within a multi-platform environment.

## Drafting in AutoCAD

The following techniques will facilitate a smooth workflow in a multi-platform project environment.

### Linking Files

Rather than drafting directly in DWG or DXF files exported from Autodesk Revit, you should use the AutoCAD external reference (xref) functionality. Open an empty drawing in AutoCAD and, using the Xref Manager, attach the exported Autodesk Revit view as an Overlay for Reference Type.

### Referencing Views and External Data

Because Autodesk Revit does not require the use of coordinates, the guidelines given here ensure precise alignment between externally created data and the building model. These methods prevent offsets from occurring when exported DWG or DXF data is referenced into AutoCAD, as well as when externally created data is re-imported into Autodesk Revit.

In AutoCAD, use 0,0,0 as the insertion point when using xrefs. Do not change the insertion point to Specify On-screen. Specifying a user coordinate system or using wblocks can introduce new origins and offsets when re-importing AutoCAD data into Autodesk Revit.

Try to maintain a form of visual proof or a reference point for externally created data. Building features often give the best visual feedback to ensure precise alignment. You might also locate points or other reference marks at grid intersections.

Externally created data can be aligned precisely using the Autodesk Revit snapping, alignment, and locking functions.

### Naming Drawings

Using the default Autodesk Revit naming convention is highly recommended. For more information, see "Naming Conventions" on page 4.

If new drawings created outside Autodesk Revit use data exported from Revit as the external reference, appropriate file names are required. Use the name of the existing DWG or DXF file and add a prefix or suffix to create the new file name.

For example, a drawing might use the following file as an external reference:

Hotel ProdEx-MT Copy-rvt-Floor Plan-Level 16-Mechanical.dwg

When the drawing is re-imported into the Autodesk Revit view 'Level 16 - Mechanical,' it could have this name:

Hotel ProdEx-MT Copy-rvt-Floor Plan-Level 16-Mechanical-ANNO.dwg

## Referencing Data into Autodesk Revit

Finally, data created in the external system is referenced into Autodesk Revit to ensure consistency throughout the design and documentation phases.

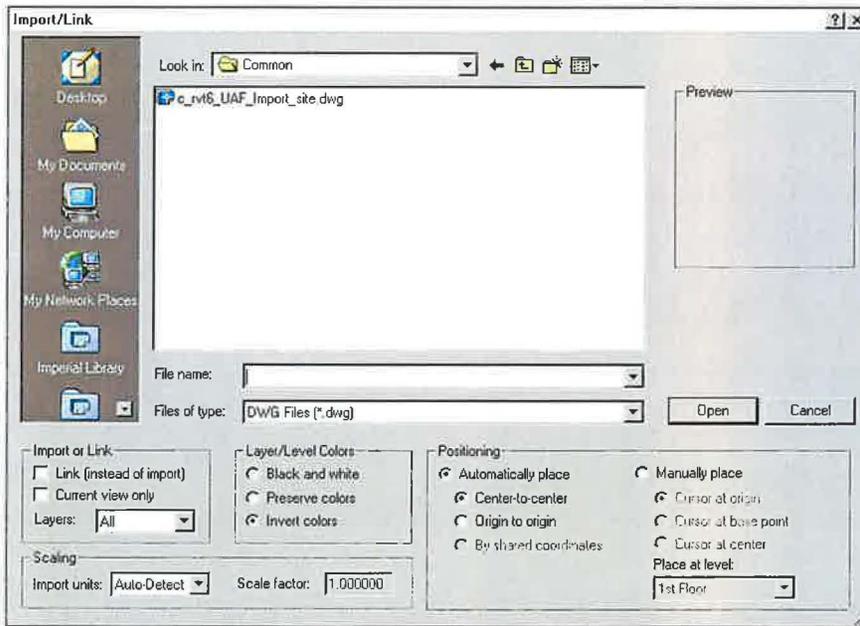
### Preparing for Referencing

In AutoCAD, unload the external references that were exported from Autodesk Revit to avoid redundant display of information (unless such display is desired for temporary referencing purposes).

### File Linking Options

On the Autodesk Revit File menu, click Import/Link ► DWG, DXF, DGN to bring in external data.

The Import/Link dialog box in Autodesk Revit offers options for linking a document created externally.



#### Import or Link

You can reference DWG or DXF data created in AutoCAD into the current Autodesk Revit project.

- **Link (instead of import):** Select Link if you want data to automatically update when the external file is changed.
- **Current view only:** Select Current view only to ensure linked files are visible only in the current view. It also ensures correct display of annotations and dimensions.

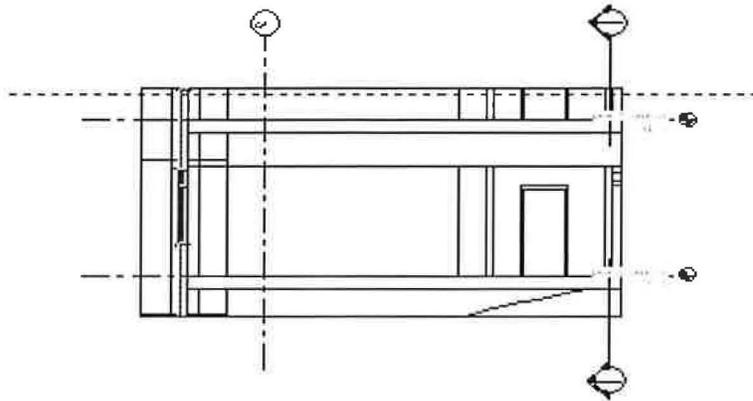
#### Scaling

In most cases, use Auto-Detect to generate correct scaling of linked data.

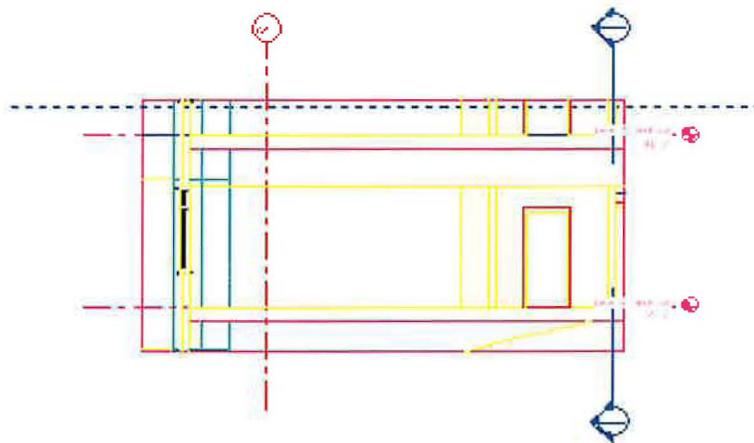
### Layer/Level Colors

These three options control the appearance of the file linked into Autodesk Revit.

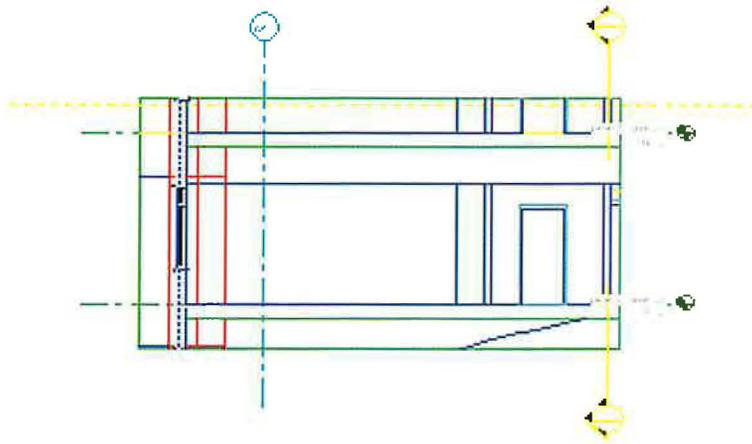
- **Black and White:** Ignores color information in the external file and displays linked data as black and white vectors.



- **Preserve Colors:** Preserves the layer or level color settings in the external file.



- **Invert Colors:** Inverts the colors in the linked file, making them easier to see. If you use a black background in AutoCAD, colors may not be appropriate on a white background in Autodesk Revit.



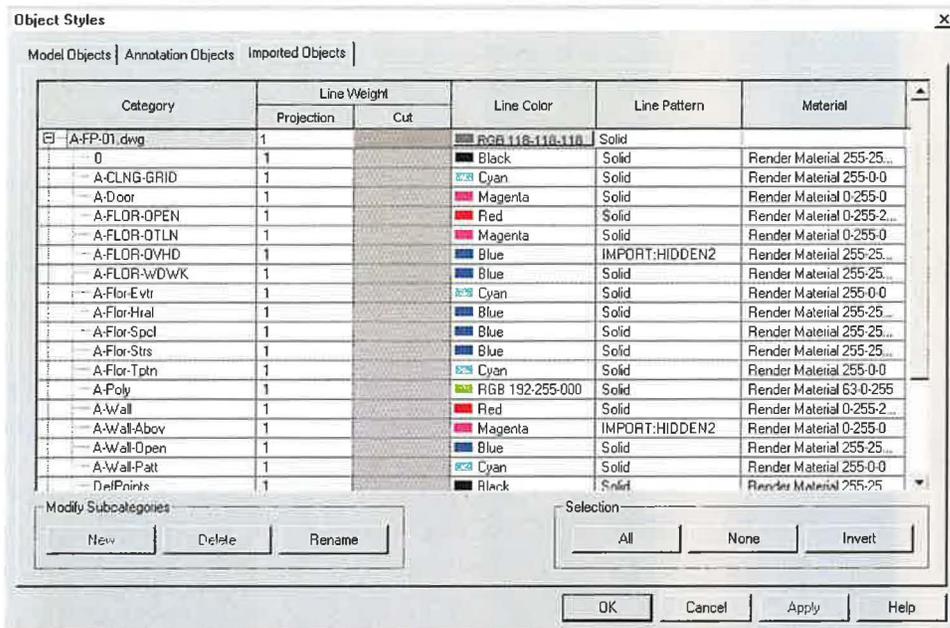
## Positioning

If you followed the guidelines in “Referencing Views and External Data” on page 6, correct alignment is best assured by selecting Automatically place in the Import/Link dialog box.

- **Automatically place:** Select one of these options for automatic placement:
  - **Center-to-center:** Aligns the center of the linked or imported file to the center of the Autodesk Revit view. Use this option when external data is offset from the origin of the drawing.
  - **Origin to origin:** Aligns the origin of the imported or linked file to the origin of the Autodesk Revit view. Use this option when relinking DWG files originally created in Autodesk Revit.
  - **By shared coordinates:** Acquires origin for use with Autodesk Revit files. Use this option when linking multiple buildings together that need to maintain a relationship to each other, or when linking a number of building files together with a site plan.
- **Manually place:** If offsets and dislocations were introduced during the process, or if you want to link a detail into a drafting view, these options help position the data that is externally linked:
  - **Cursor at origin:** The linked file appears attached to the Autodesk Revit cursor at its origin. This is the typical option to manually place data.
  - **Cursor at base point:** The linked file appears attached to the Autodesk Revit cursor at its base point.
  - **Cursor at center:** The linked file appears attached to the Autodesk Revit cursor at its graphic center point. This option is helpful when handling widely displaced data.
  - **Place at level:** The linked file appears attached to the designated Autodesk Revit level.

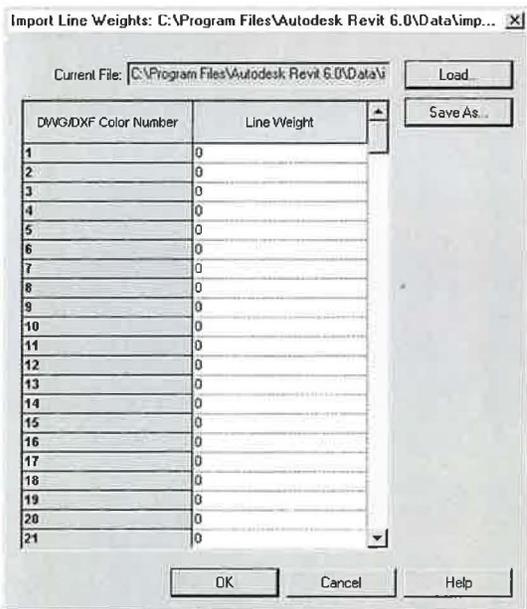
## Controlling the Appearance of Linked Data

The appearance of imported or linked data is managed using the Imported Objects tab in the Object Styles dialog box. On the Settings menu, click Object Styles. You can control the line weight, line color, line pattern, and the material for each layer or level in the linked file.

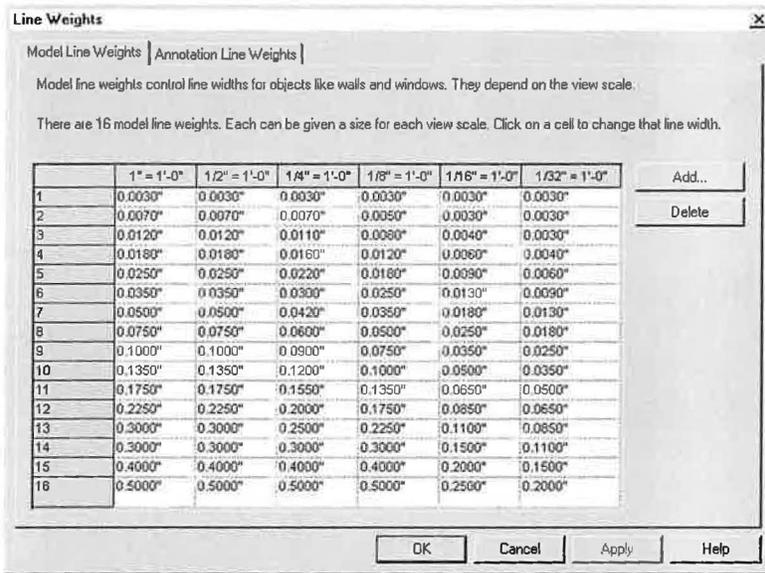


## Specifying Line Weights in Linked or Imported Drawings

You can specify line weights in imported files. On the File menu, click Import/Export Settings, and then click Import Line Weights DWG/DXF. This dialog box coordinates color mapping in linked files to Autodesk Revit line weights. The mapping can be saved to or loaded from an external text file.

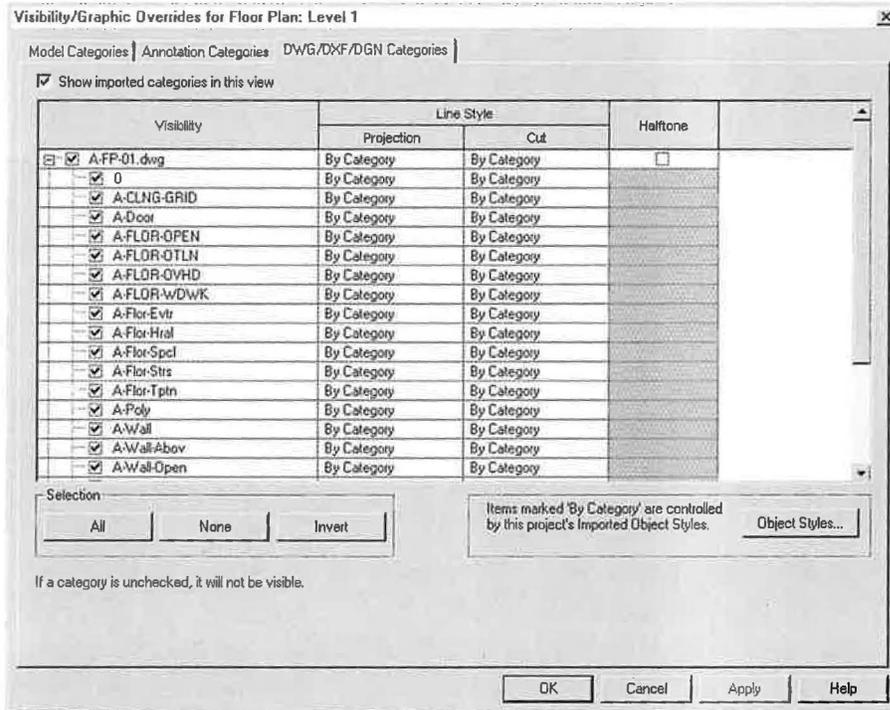


You can review Autodesk Revit line weight settings by clicking Line Weights on the Settings menu. Because Autodesk Revit line weights have different widths at different scales, many imported colors may map to a single line weight.



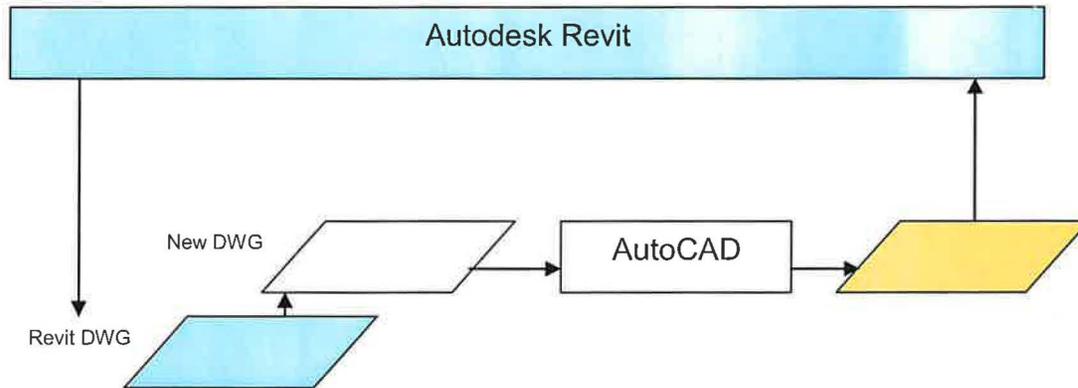
## Controlling the Visibility of Entities in Linked Files

You control visibility of entities in imported files in the Visibility/Graphic Overrides dialog box. On the DWG/DXF/DGN Categories tab, you can specify visibility by layer for entire imported files or for all imports as a whole.

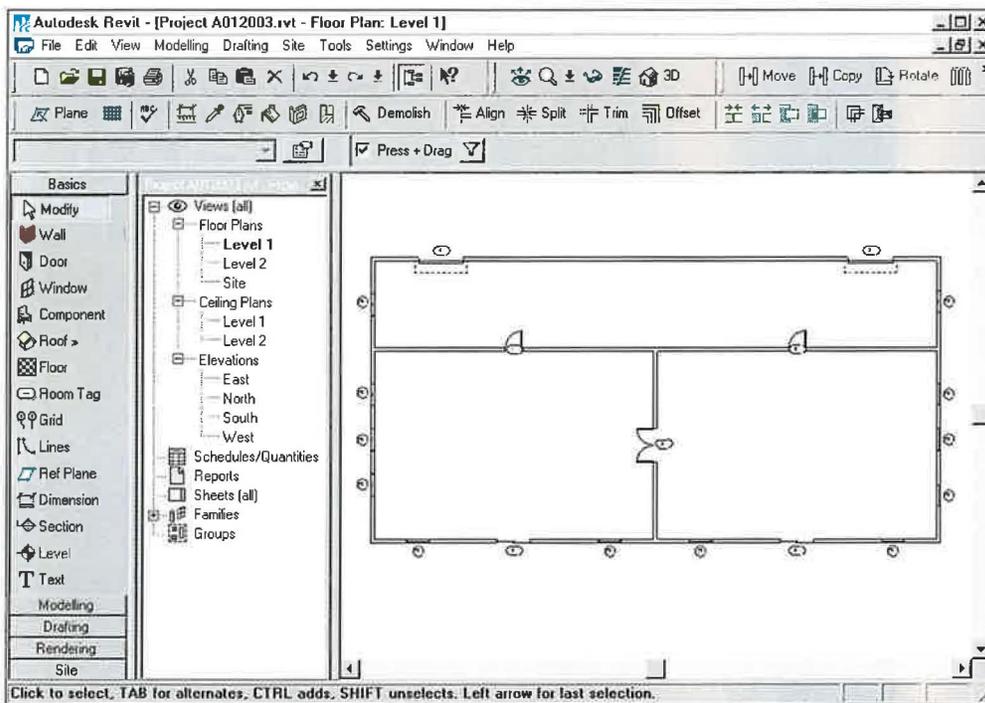


# Step by Step: Exporting to AutoCAD and Relinking to Autodesk Revit

This graphic illustrates the process of exporting a view from Autodesk Revit into an empty DWG file. After you edit the file in AutoCAD, you link it back into the Autodesk Revit project.

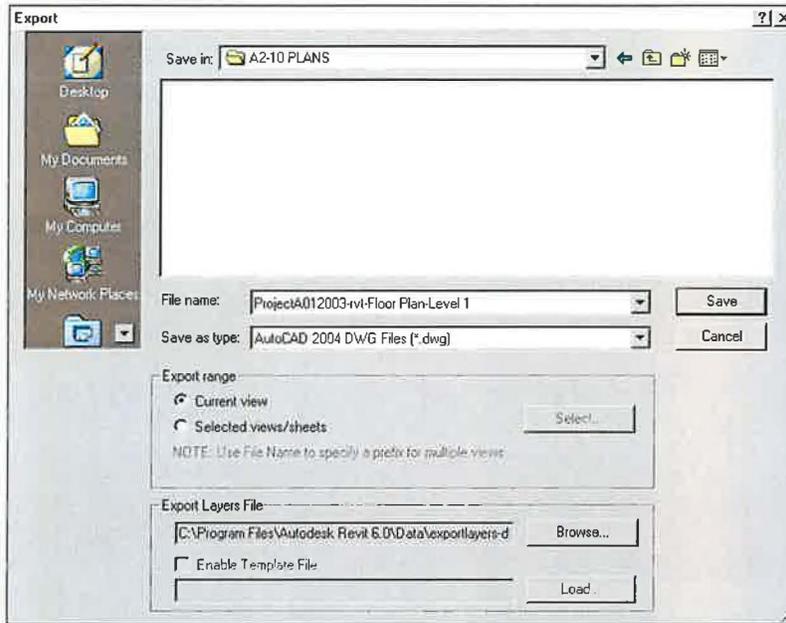


Using a floor plan view as an example, the following steps show you how to use AutoCAD to annotate building model data created in Autodesk Revit.



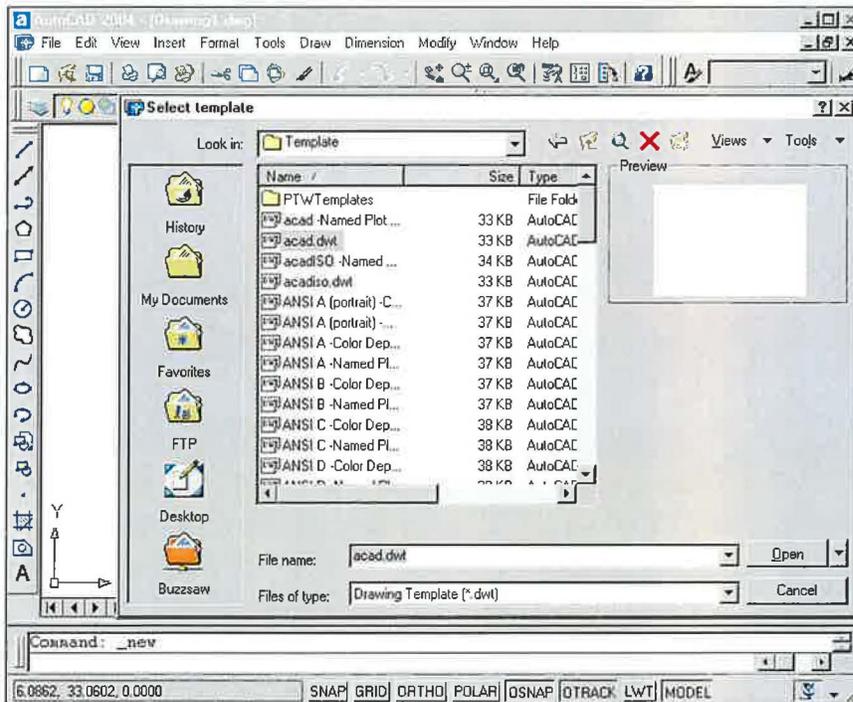
## Step 1: Export the Data

In Autodesk Revit, you can export either single views or entire sheets. When exporting entire sheets, you export the files into different subdirectories, giving each directory the same name as the sheet itself to ensure consistent naming throughout the project.

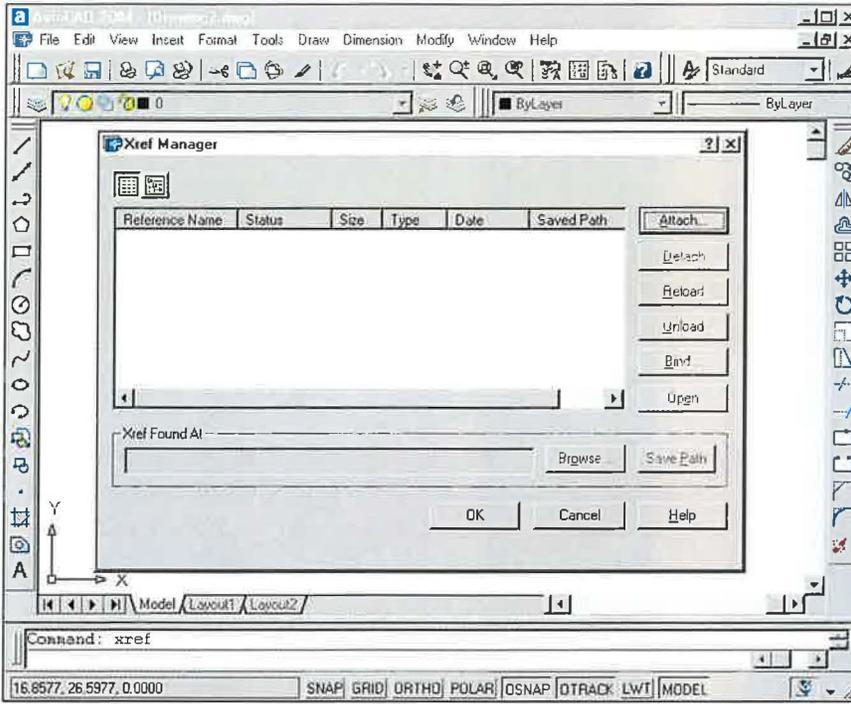


## Step 2: Draft and Annotate in AutoCAD

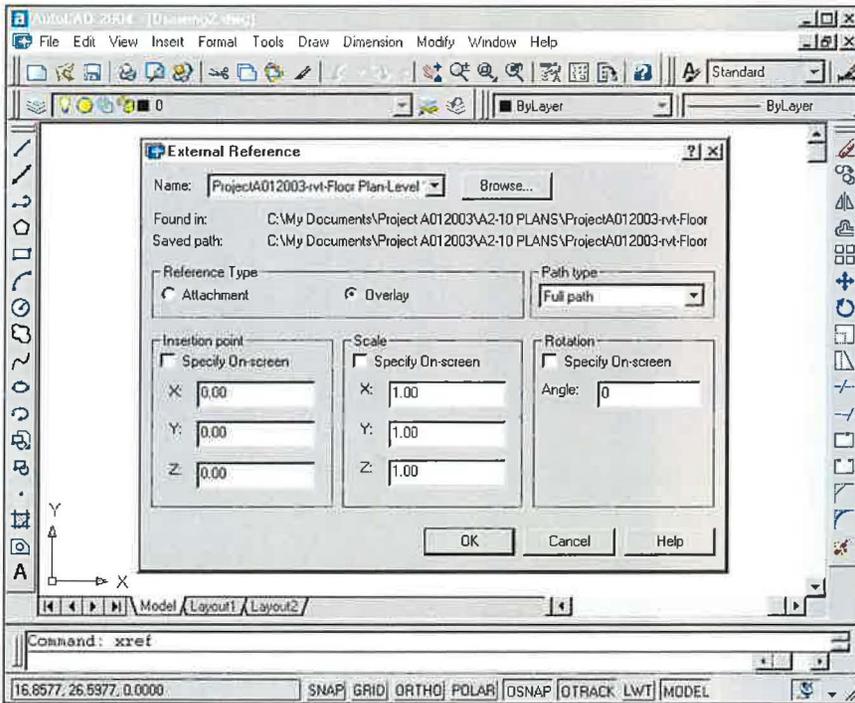
For each Autodesk Revit view to be annotated in AutoCAD, open a new DWG file using either a template file or Start from Scratch.



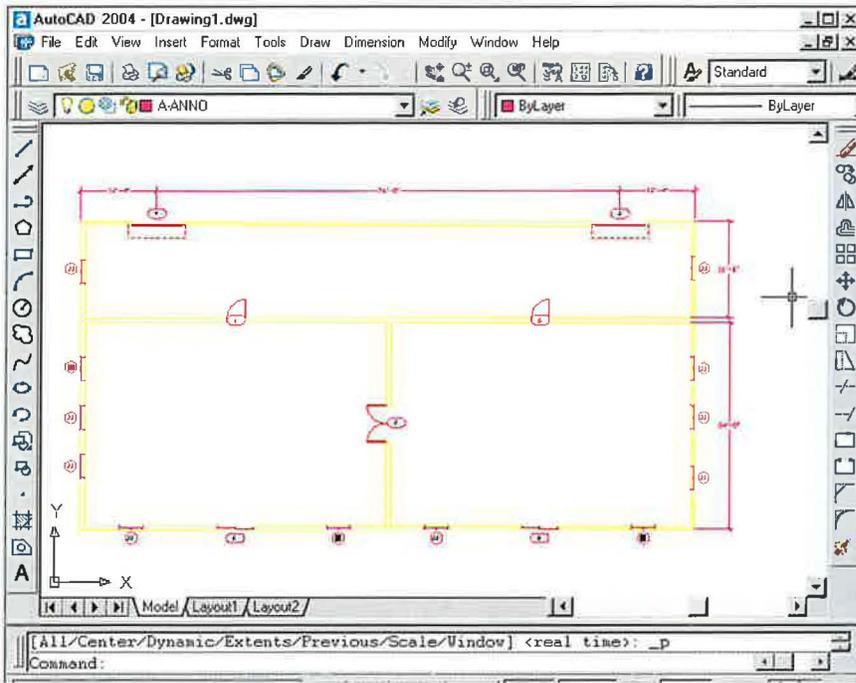
Use Attach in the Xref Manager to externally reference the exported views created in Step 1.



Be sure to use 0,0,0, not Specify On-screen, as the insertion point in AutoCAD. Select Overlay for Reference Type. (Unlike Attachment, an overlaid xref is not included when the host drawing is itself attached or overlaid as an xref in another drawing.)



You can now begin drafting and annotating in AutoCAD.



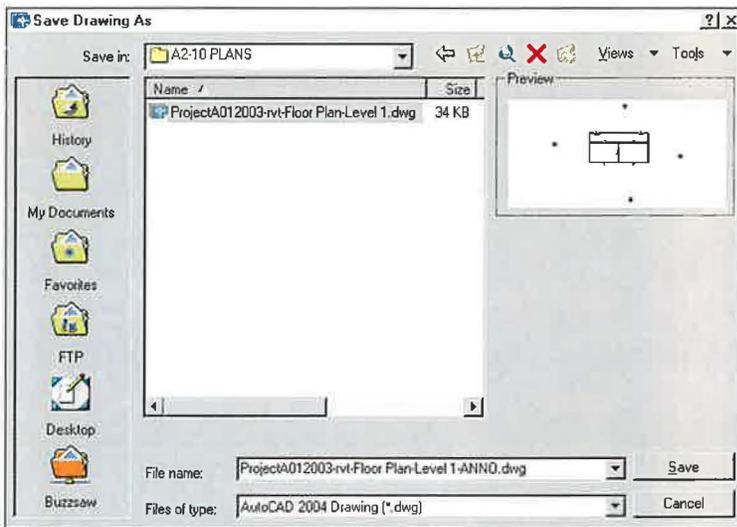
### Step 3: Save the Drawing

Save the drawing in the same directory as the linked DWG file. Create the file name by adding a suffix to the name of the linked file. For example, when the linked DWG name is

Floor Plan-Level 1.dwg,

the annotated DWG file should be

Floor Plan-Level 1-ANNO.dwg.



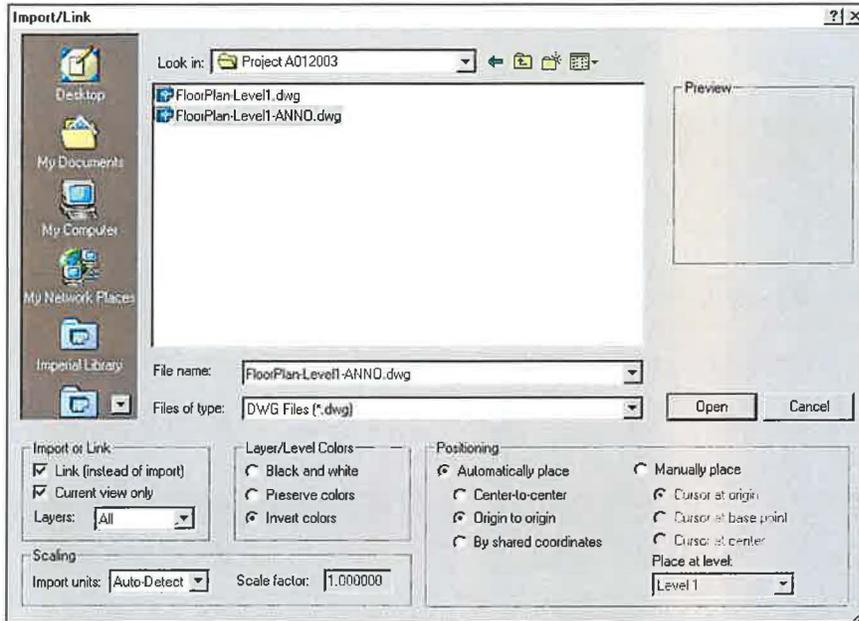
### Step 4: Link the Edited DWG File into Autodesk Revit

There are two ways to link edited DWG files. You can link the newly created DWG file with or without the underlying AutoCAD xref attached. Both methods are discussed here.

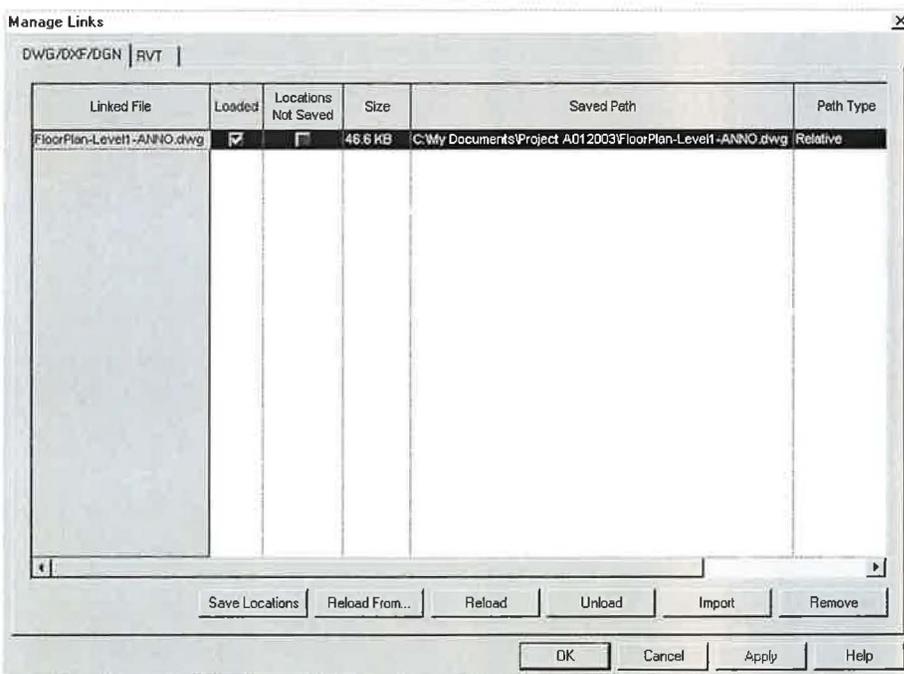
## Linking the File with the Underlying Xref Attached

This method ensures that the data created in the DWG file is precisely inserted into Autodesk Revit, because the originally exported file is still visible. This method is recommended for concurrent use of AutoCAD and Autodesk Revit while annotating views in Autodesk Revit is still underway.

On the Autodesk Revit File menu, click Import/Link ► DWG, DXF, DGN, and select the newly-created DWG file in the Import/Link dialog box. Select the Link (instead of import) and the Current view only options. Under Positioning, select Automatically Place, and then select Origin to origin.



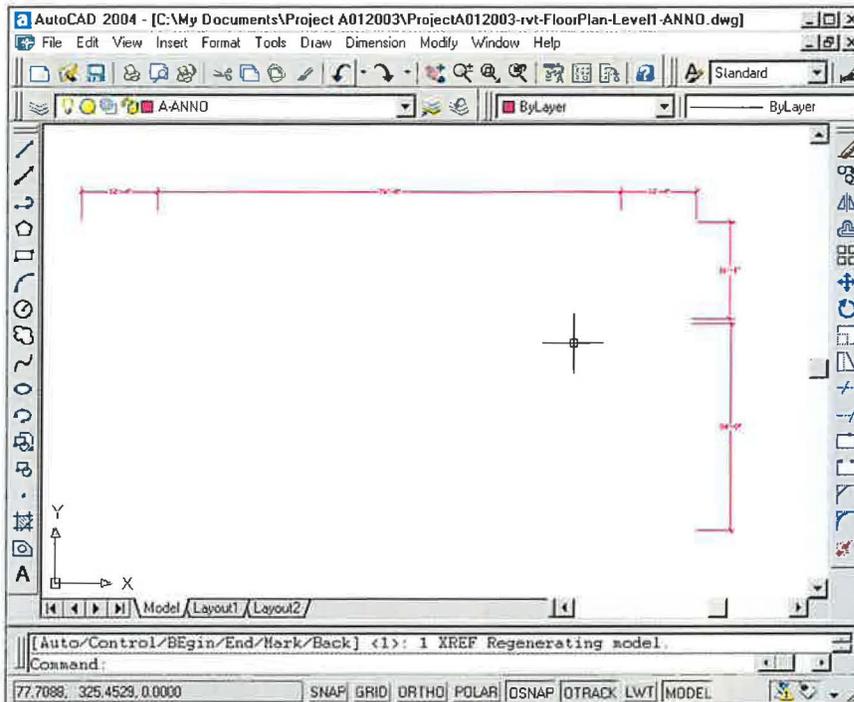
After the file is linked, suppress display of the Autodesk Revit-generated elements. In AutoCAD, unload the Autodesk Revit exported file. Return to Autodesk Revit and click Manage Links from the File menu. Select the linked file, and click Reload.



As an alternative, you can turn off layers that were generated by the original export on the DWG/DXF/DGN Categories tab in the Visibility/Graphics Override dialog box. Either method removes display of redundant entities.

### Linking the File Without the Underlying Xref

Use this method if you do not need to see the original Autodesk Revit-derived data in the AutoCAD xref. After you annotate the DWG file, you unload the xref, and then save the file before linking it back into Autodesk Revit. In AutoCAD, you now see only the annotation that you created.



When you link the file in Autodesk Revit, the annotation you added externally displays without the redundant display of AutoCAD entities.

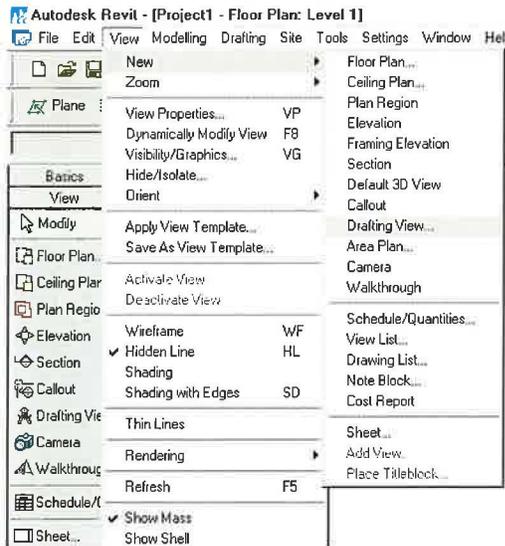
If you need to reference the Autodesk Revit data in AutoCAD in the future, reload the xref in Xref Manager and save the file. It remains visible in AutoCAD, but is not visible when the edited DWG is linked into Autodesk Revit.

# Step by Step: Linking DWG Details to Autodesk Revit

The steps in this section show you how to link existing DWG details to an Autodesk Revit project.

## Step 1: Create Drafting Views for the DWG Files

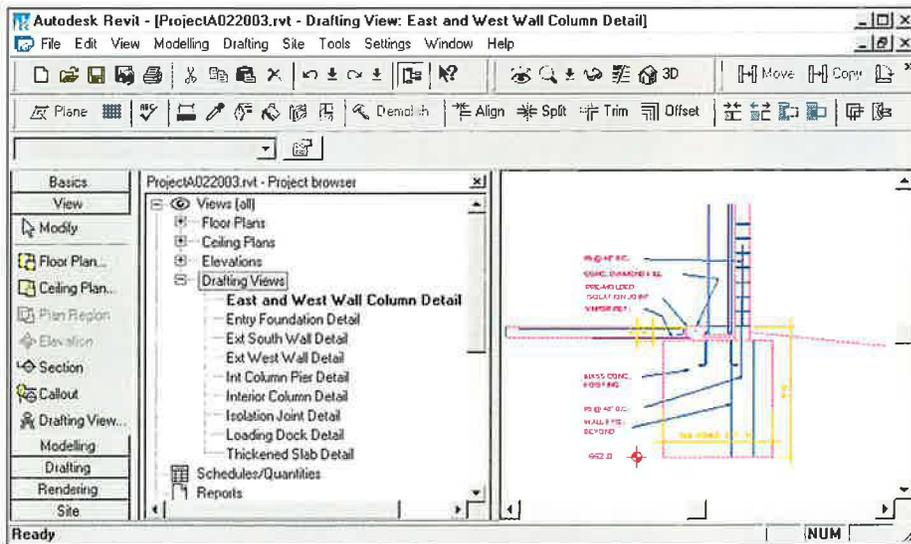
For each detail you want to import or link, create and name new drafting views in Autodesk Revit, as shown here.



## Step 2: Import or Link the DWG Files

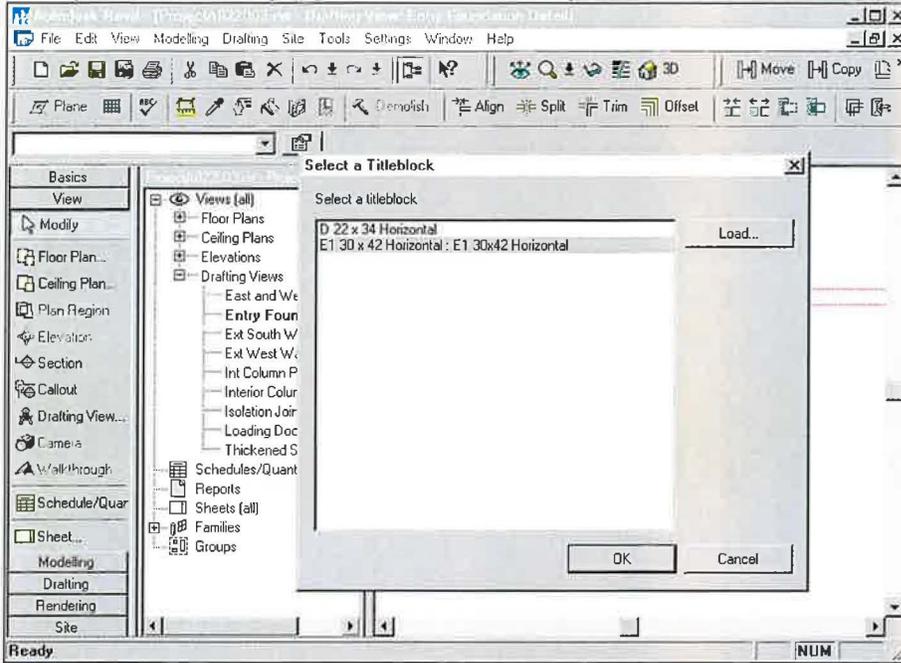
After the drafting view has been created, you either import or link the external file. Open the new drafting view, and on the File menu, click Import/Link > DWG, DXF, DGN. Select the Preserve colors and the Center-to-center options for the best performance.

If you import the file, the data is embedded in the Autodesk Revit project. If you link the files, the result is a smaller Autodesk Revit file that can be further modified in AutoCAD. Autodesk Revit automatically gets the most current version of the linked file whenever the project is opened or the link is reloaded. It is best to use Link if you plan to develop details in AutoCAD. Import is recommended if you plan to modify your details using Autodesk Revit.

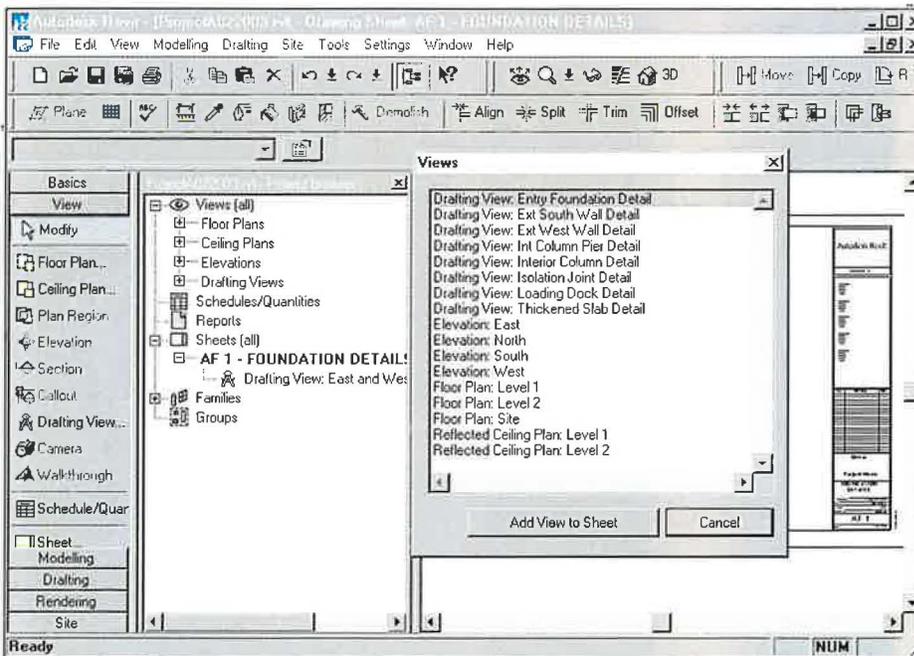


### Step 3: Place the Details on a Sheet

After arranging the individual detail files in drafting views, open an existing sheet or create a new sheet for the details. On the View menu, click New ► Sheet. In the Select a Titleblock dialog box, select the desired titleblock.



After you have created the sheet, place the drafting views. EPlace drafting views in the same way you would place any view created in Autodesk Revit. Either drag the desired views from the Project Browser onto the sheet or, on the View menu, click New ► Add View, and then select the desired view.

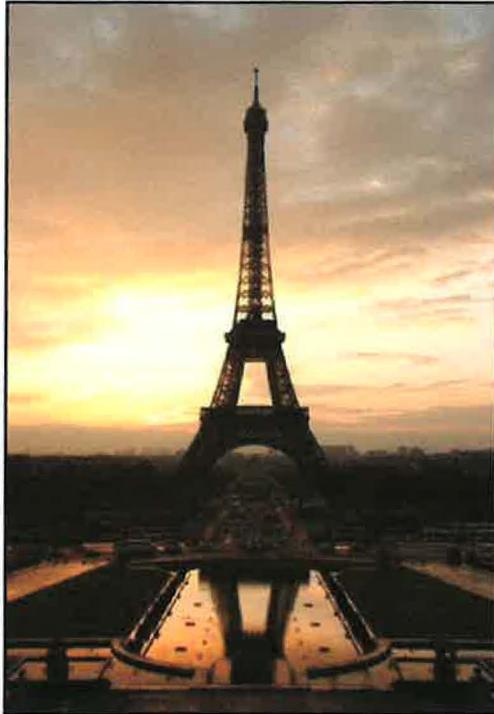


Place drafting views in the same way you would place any view created in Autodesk Revit. After you have placed the view, the DWG details are part of your Autodesk Revit set.



## **Appendix - H**

### **Skywards (Worlds Tallest Buildings and 2008 Beijing Olympics)**



# Skywards

**Location : Paris**  
**Height : 318 Meters**  
**Floors :**  
**Built : 1887**

**Location : Dubai**  
**Height : 321 Meters**  
**Floors :**  
**Built : 1999**





**Location : Shanghai China**  
**Height : 421 Meters**  
**Floors : 88**  
**Built : 1998**

**Location : Chicago Illinois**  
**Height : 443 Meters**  
**Floors : 110**  
**Built : 1973**





**Location : Kuala Lumpur  
Malaysia**

**Height : 452 Meters**

**Floors : 88**

**Built : 1998**

**Location : Shanghai China**  
**Height : 492 Meters**  
**Floors : 101**  
**To Be Completed : 2007**

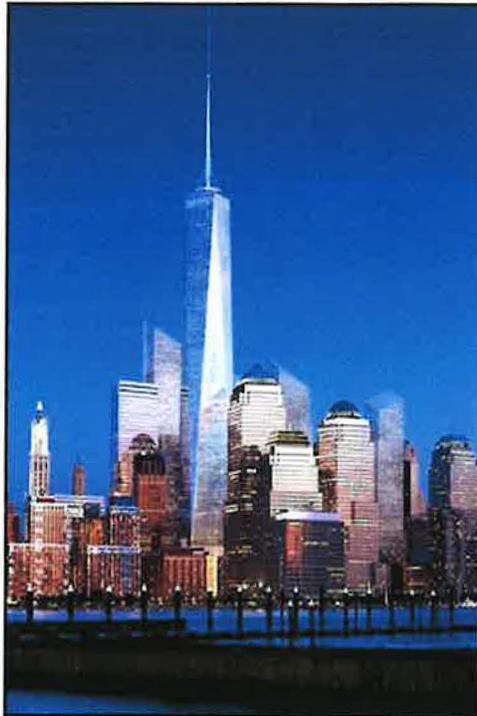




**Location : Taipei Taiwan**  
**Height : 508 Meters**  
**Floors : 101**  
**Built : 2004**

**Location : Guangzhou,  
Shanghai China**  
**Height : 514.8 Meters**  
**Floors : 131**  
**To Be Completed : 2010**



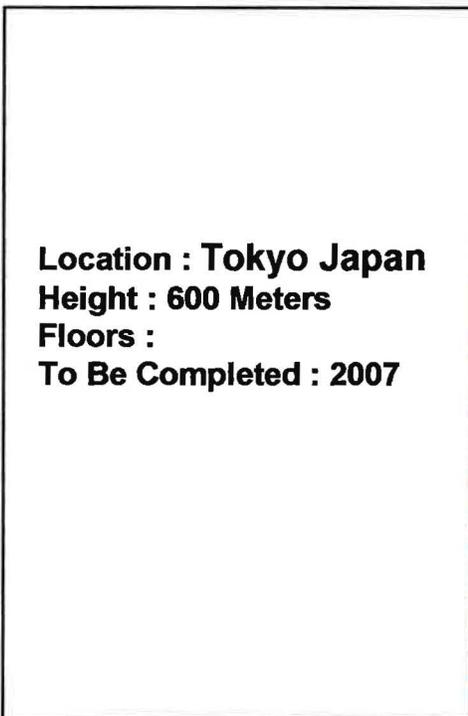


**Location : WTC Manhattan  
NY**

**Height : 541 Meters**

**Floors : 69**

**To Be Completed : 2010**



**Location : Tokyo Japan**

**Height : 600 Meters**

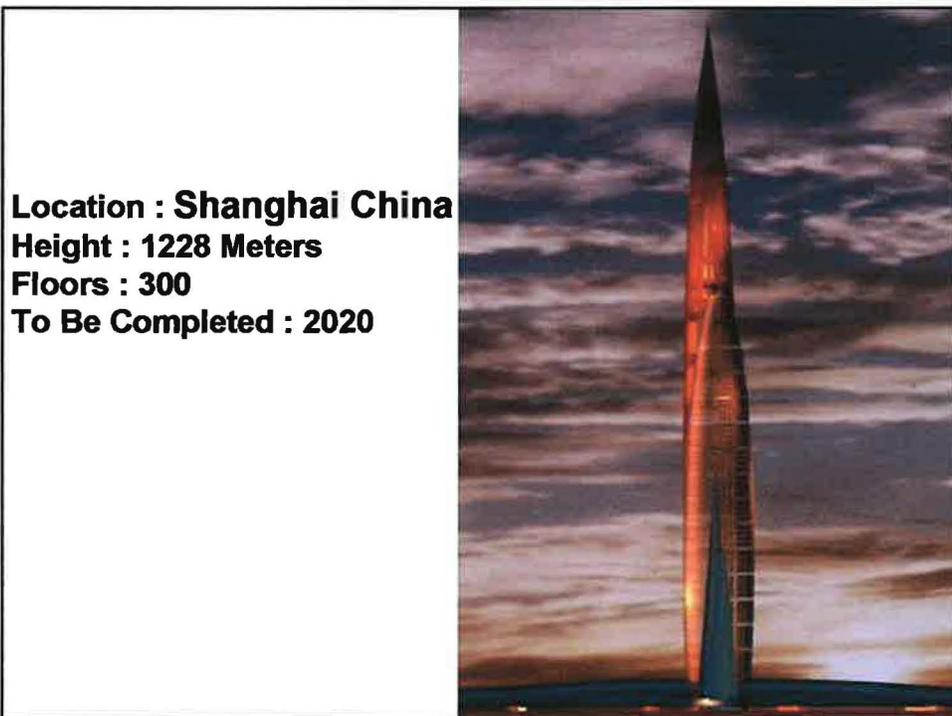
**Floors :**

**To Be Completed : 2007**

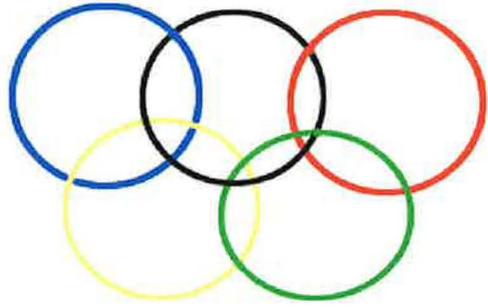




**Location : Dubai**  
**Height : 705 Meters**  
**Floors : 160**  
**To Be Completed : 2008**



**Location : Shanghai China**  
**Height : 1228 Meters**  
**Floors : 300**  
**To Be Completed : 2020**



# **Jeux Olympiques 2008**

**Beijing — China**

**Plans des stades**









