CONCEPT C-3
PRELIMINARY DESIGN

With the selection of concept C-3 as the optimal solution, the preliminary development phase begins. Refinement and analysis through building section studies occur while interior and exterior vegetation variations are explored. The evolution of pier satellites take form as well as further definition of the parking structure and HVAC systems are also presented. Preliminary development is terminated by detail studies of ceiling components, lighting fixtures and roof membrane alternatives.
SATELLITE CONCEPTS

[Various sketches of satellite concepts and ideas]

LET VISITORS STAY IN TENTS IF POSSIBLE.

[Text annotation on a sketch]

Hi Velma

[Another sketch with text annotations]
MERO GEOMETRY AND GROUND PLANS

Squares. Geometric patterns with squares in the upper and lower chords (Figs. 16-19) are best suited to square or rectangular ground plans. They are also suitable for plans that are octagonal or trapezoidal with included angles of 45° and 135°, or sections of such shapes. Rectangular ground plans are also feasible if the sides of top and bottom chord squares are arranged at 45° to the plan boundaries. (Figs. 20 & 21)

Triangles. Geometric patterns with triangles in the top and bottom chords (Figs. 22-24) are used for ground plans with triangular or hexagonal shapes. Plans of trapezoidal shape with 60° and 120° included angles, or sections of such shapes, are also suitable.

Rectangles. Geometric patterns with rectangles in top and bottom chords (Figs. 14 & 15) are used for rectangularrly shaped ground plans where length is considerably greater than width.

"DERIVED" SPACE STRUCTURES

The basic patterns described above contain elements of fixed relationship to one another. However, the MERO system can also be used to produce structures of irregular shape in one or more dimensions.

Such new structural shapes are "derived" from similar, but "standard" MERO space-frame geometries by means of coordinate transformation. For example, figure 25 illustrates a ground plan with non-parallel sides derived from a "standard" plan, i.e., one with two pairs of parallel sides.
SATellite SEMI-PRIVATE

PARTITION LAYOUT ANALYSIS

VISUAL PRIVACY ONLY
SONIC REDUCED
HVAC Air Circulation Analysis
HVAC DUCT LAYOUT ALTERNATIVES
HVAC DUCT LAYOUT ALTERNATIVES
HVAC SIZING

18 x 24 = 432 ft² x 2.5 cfm = 1080 ÷ 1000 = 1.08 x 1.3 = 1.4 ft²

\[
\begin{align*}
\text{H} \times \frac{\text{D}}{\text{V}} &= .447 \\
\sqrt{.447} &= .67 \times 2 = 1.34 = 12'' + 4\frac{1}{2}'' \text{ ROUNO.}
\end{align*}
\]

18 x 23 = 414 ft² + 432 ft² = 846 ft²

8) 246 x 2.5 cfm = 2115 ÷ 1000 = 2.115 x 1.3 = 2.75 ft²

\[
\begin{align*}
2.75 \text{ ft}^2 & \div \pi = .875 \\
\sqrt{.875} &= .93 \times 2 = 1.87 \div 12'' + 10\frac{1}{2}'' = 22\frac{1}{2}''
\end{align*}
\]

19) 3 x 21 = 367.5 ft² + 846 ft² = 1213.5 ft²

20) 1213.5 x 2.5 cfm = 3033.75 ÷ 1000 = 3.03375 x 1.3 = 3.94 ft²

\[
\begin{align*}
3.94 \div \pi &= 1.24 \\
\sqrt{1.24} &= 1.12 \times 2 = 2.24 \text{ ft}^2
\end{align*}
\]

21) 1213.5 x 2.5 cfm = 4241.25 ÷ 1000 = 4.24 x 1.3 = 5.51 ft²

\[
\begin{align*}
5.51 \div \pi &= 1.76 \\
\sqrt{1.76} &= 1.33 \times 2 = 2.66 \div 24'' + 7\frac{3}{4}'' = 31\frac{3}{4}''
\end{align*}
\]

22) 25 x 21 = 483 + 1616.5 = 2179.5 ft²

23) 2179.5 x 2.5 cfm = 5449.75 ÷ 1000 = 5.45 x 1.3 = 7.085 ft²

\[
\begin{align*}
7.09 \div \pi &= 2.26 \\
\sqrt{2.26} &= 1.50 \times 2 = 3\frac{1}{2}'' = 36''
\end{align*}
\]

24) 3 x 21 = 630 + 2179.5 = 2809.5 ft²

25) 2809.5 x 2.5 = 7023.75 ÷ 1000 = 7.024 x 1.3 = 9.13 ft²

\[
\begin{align*}
9.13 \text{ ft}^2 & \div \pi = 2.91 \\
\sqrt{2.91} &= 1.71 \times 2 = 3.42 \div 24'' + 8'' = 41''
\end{align*}
\]

26) 21 x 17.5 = 367.5 ft²

367.5 x 2.5 = 918.75 ÷ 1000 = 1.115 x 1.3 = 1.495 ft²

\[
\begin{align*}
1.115 \div \pi &= .380 \\
\sqrt{.380} &= .62 \times 2 = 1.24 \div 12'' + 3\frac{1}{2}'' = 15''
\end{align*}
\]

27) 23 x 21 = 483 + 367.5 ft² = 850.5 ft²

850.5 x 2.5 = 2126.25 ÷ 1000 = 2.126 x 1.3 = 2.76 ft²

\[
\begin{align*}
2.76 \div \pi &= .879 \\
\sqrt{.879} &= .938 \times 2 = 1.875 \div 12'' + 10\frac{1}{2}'' = 22\frac{1}{2}''
\end{align*}
\]

28) 24 x 21 = 504 + 850.5 = 1354.5 ft²

1354.5 x 2.5 = 3386.25 ÷ 1000 = 3.386 x 1.3 = 4.402 ft²

\[
\begin{align*}
4.402 \div \pi &= 1.40 \\
\sqrt{1.40} &= 1.18 \times 2 = 2.36 \div 2'' + 4\frac{1}{2}'' = 28\frac{1}{2}''
\end{align*}
\]
\[ 24 \times 21 = 504 + 1354.5 = 1858.5 \text{ ft}^2 \]

\[ \begin{align*}
1888.5 \times 2.5 &= 4721.25 \div 1000 = 4.72 \times 1.3 = 6.04 \text{ ft}^2 \\
6.04 \div \pi &= 1.92 \quad \sqrt{1.92} = 1.39 \times 2 = 2.77 = 2\frac{1}{4} + 9\frac{1}{4} = \\
\end{align*} \]

K. \[ 24 \times 13 = 312 \text{ ft}^2 \]

\[ \begin{align*}
312 \times 2.5 &= 780 \div 1000 = 0.78 \times 1.3 = 1.014 \text{ ft}^2 \\
1.014 \div \pi &= .322 \quad \sqrt{.322} = .568 \quad (\text{approx}) \\
1.134 &= 12\frac{1}{12} + 1\frac{1}{12} \\
\end{align*} \]

L. \[ 24 \times 13 = 312 + 624 = 936 \text{ ft}^2 \]

\[ \begin{align*}
936 \times 2.5 &= 2340 \div 1000 = 2.34 \times 1.3 = 3.042 \text{ ft}^2 \\
3.042 \div \pi &= .968 \quad \sqrt{.968} = .984 \times 2 = 1.968 = 12\frac{1}{12} - 1\frac{1}{12} \\
\end{align*} \]

M. \[ 312 + 624 = 1248 \]

\[ \begin{align*}
1248 \times 2.5 &= 3120 \div 1000 = 3.12 \times 1.3 = 4.056 \text{ ft}^2 \\
4.056 \div \pi &= 1.29 \quad \sqrt{1.29} = 1.136 \times 2 = 2.272 = 24\frac{3}{4} + 3\frac{3}{4} \\
\end{align*} \]

N. \[ 312 + 1248 = 1560 \]

\[ \begin{align*}
1560 \times 2.5 &= 3900 \div 1000 = 3.9 \times 1.3 = 5.07 \text{ ft}^2 \\
5.07 \div \pi &= 1.61 \quad \sqrt{1.61} = 1.27 \times 2 = 2.54 = 24\frac{1}{3} + 6\frac{1}{2} \\
\end{align*} \]

P. \[ 1560 + 1858.5 = 3418.5 \text{ ft}^2 \]

\[ \begin{align*}
3418.5 \times 2.5 &= 8546.25 \div 1000 = 8.546 \times 1.3 = 11.11 \text{ ft}^2 \\
11.11 \div \pi &= 3.53 \quad \sqrt{3.53} = 1.88 \times 2 = 3.76 = 36\frac{1}{4} + 9\frac{1}{4} \\
\end{align*} \]

Q. \[ 3418.5 + 2807.5 = 6226 \text{ ft}^2 \]

\[ \begin{align*}
6226 \text{ ft}^2 \times 2.5 &= 15565 \div 1000 = 15.57 \times 1.3 = 20.241 \text{ ft}^2 \\
20.241 \div \pi &= 6.44 \quad \sqrt{6.44} = 2.53 \times 2 = 5.07 = 5\frac{1}{12} \\
\end{align*} \]

R. \[ (28 \times 13) + (62 \times 41) + (62 \times 35 \div 2) + (8 \times 25) + (8 \times 33) + (23 \times 13) = \]
\[ 546 + 2542 + 1085 + 200 + 264 = 4637 \text{ ft}^2 \]
\[ 4637 \times 2.5 = 11,592.5 \div 1000 = 11.59 \times 1.3 = 15.07 \]
\[ 15.07 \div \pi = 4.79 \quad \sqrt{4.79} = 2.19 \times 2 = 4.38 = 4'1\frac{1}{2}'' \]
\[ 2.3 \times 13 = 29.9 \text{ ft}^2 \]
\[ 29.9 \times 2.5 = 747.5 \div 1000 = 0.7475 \times 1.3 = 0.971 \]
\[ 0.971 \div \pi = 0.309 \quad \sqrt{0.309} = 0.556 \times 2 = 1.11 = 12'' + 1\frac{1}{2}'' \]
\[ 4637 + 299 = 4936 \text{ ft}^2 \]
\[ 4936 \times 2.5 = 12,340 \div 1000 = 12.34 \times 1.3 = 16.04 \]
\[ 16.04 \div \pi = 5.10 \quad \sqrt{5.10} = 2.25 \times 2 = 4.51 = 4'6'' \]
\[ 4936 + 6228 = 11,164 \]
\[ 11,164 \times 2.5 = 27,910 \div 1000 = 27.91 \times 1.3 = 36.283 \text{ ft}^2 \]
\[ 36.283 \div \pi = 11.54 \quad \sqrt{11.54} = 3.34 \times 2 = 6.71 = 6'9\frac{1}{2}'' \]

- REMOVE
- 1.4 ft² - 16''
- 2.75 ft² - 1'13''
- 3.94 ft² - 2'-3''
- 5.51 ft² - 2'-73/4''
- 7.085 ft² - 3'-0''
- 1.145 ft² - 1'-3''
- 2.76 ft² - 1'-101/2''
- 4.402 ft² - 2'-41/2''
- 6.04 ft² - 2'-91/2''
- 1.014 ft² - 1'-11/2''
- 2.028 ft² - 1'-71/2''
- 3.04Z ft² - 1'-11''
- 4.056 ft² - 2'-33/4''
- 5.07 ft² - 2'-61/2''
- 11.11 ft² - 3'-41/2''
- 18.84 ft² - 4'-103/4''
- 15.07 ft² - 4'-41/2''
- 0.971 ft² - 1'-11''
- 10.04 ft² - 4'-6''
- 24.00 ft² - 6'-0''

\[
\begin{align*}
1.35 \times 1.04 & = 1'-4\frac{1}{4}'' \times 1'-0\frac{1}{2}'' \\
1.35 \times 2.04 & = 1'-4\frac{1}{4}'' \times 2'-0\frac{1}{4}'' \\
2.49 \times 1.35 & = 2'-11'' \times 1'-4\frac{1}{4}'' \\
1.89 \times 2.91 & = 1'-10\frac{3}{4}'' \times 2'-11'' \\
3.75 \times 1.89 & = 3'-4'' \times 1'-10\frac{3}{4}'' \\
1.08 \times 1.106 & = 1'-1'' \times 1'-1\frac{1}{4}'' \\
2.55 \times 1.08 & = 2'-1\frac{5}{8}'' \times 1'-11'' \\
1.72 \times 2.55 & = 1'-8\frac{3}{4}'' \times 2'-6\frac{3}{8}'' \\
2.25 \times 1.72 & = 2'-0\frac{3}{4}'' \times 1'-8\frac{3}{4}'' \\
3.88 \times 1.14 & = 3'-1\frac{1}{2}'' \times 1'-1\frac{1}{4}'' \\
2.21 \times 0.885 & = 2'-5\frac{1}{2}'' \times 10\frac{1}{2}'' \\
\end{align*}
\]
TERMINAL WEST ELEVATION
TERMINAL EAST ELEVATION
Terminal North Elevation
INTERIOR OVERVIEW
SECOND LEVEL PLANS

PARKING STRUCTURE
TERMINAL SECOND LEVEL - BAGGAGE CK IN PLATFORM
TO BAGGAGE CLAIM
LOWER LEVEL

SPECIAL STUDY - SIGNAGE SYSTEM
SUMMARY

The summarization through seven months of anxiety, achievement, and hard work appears astounding when perceived as a whole, yet, in reference to the expectation of the result, prodigious. To analyze and extract conclusions from this time-period, is to also make an examination of oneself. It is to evaluate your growth and development; to reflect upon where you have made errors, and what revelation was ascertained from them. These seven months were a time-period of testing and exploration; a time of expansion to new boundaries, a voyage into an unknown territory. It was an opportunity of improvement.

In more pragmatic terms, this summary will be a comparative analysis of what I intended to
accomplish, and what was actually achieved, and also to what degree of success this achievement attained.

My first evaluation will be in reference to the size of this thesis undertaking. My initial preconceptions of what this project would encompass and what it actually entailed were two different items. My original intention was to pick a project which would be of a challenging and demanding scale as well as to promote development and growth. To this objective I was extremely successful. At times it's diversification provided much anxiety and frustration. My unacquaintance with the volumes of this endeavor also lead to some interesting revelations. A prime example of this would be the parking requirements. From research for the program, the needs called for the storage of some 2,170 cars. I thought to myself, "park 2,170 cars ... no problem!" Little did I know what was involved in parking and segregating 2,170 cars until I innatiated the conceptual analysis for the parking structure, and when I added the element of scale... WOW!!! Thus in terms of complexity, it was a very formidable endeavor.

Secondly, I desired to select a project of a futuristic building type. One which would have a place in the future world or society. An airport passenger terminal facility easily fulfilled this need. I believe that flying is a mode of transportation which is, and will continue to be, interlinked with our ever expanding life style. One that as travel time becomes more critical, will be utilized to a greater extent. Coupled with a genuine interest in building types which involved the interface of numerous circulation systems, as well as the impending need of a new terminal facility at Evansville Dress Regional Airport, the project
selection was an easy one to make.

Within the approach and execution of this project, there were a number of personal architectural philosophies and concepts I desired to test and research. This verification was in hopes to "gel" and formulate my ideas about architecture. One of my new philosophies was that of designing without the utilization of a "grid". A kind of intuitive design methodology from which guideline and direction were obtained from the functional needs and requirements of the space. Letting your hand dictate the forms and shapes and not the parallel bar; to not have a grid with "reference points" which subconsciously intimidate and have a strong influence on resultant forms. I do realize, however, that the formality of structure must be recognized and dealt with. Yet, I feel that sometimes, when introduced too early, a grid or structural bay system has too much of an influence on the resultant design, and can limit the potential as to what can actually be created. As I utilized this new found philosophy, the pen flowed freely. The paper was my vehicle; and my limitations, the boundaries of my imagination. The results... well, they were truly enlightening. My love for geometry and clean lines mated with my new found freedom produced the spacial shapes and organizations I desired. The price to pay, however, was efficiency. In laying out the structure for my building, the cost of my freedom was revealed. Joints were complex and spans became irregular. The triumphs in standardization were neutralized by the problems of unique and special situations. Words like economy and efficiency soon dissipated from my speech, however, soon the problems and complications took on resolvable forms, and I feel confident that the building
could achieve realization. Thus, my philosophy still remains, but it has been altered. I still believe in methodology without the imposition of the grid, but structural considerations and formulations must be made from the outset. There must occur a kind of oscillation, an alternation "back and forth", between formality and fantasy, until you arrive at an optimal balance. The lessons and knowledge obtained from this were of paramount importance for my personal growth.

Another philosophy or intention which was underlying during the design process was to intergrate into my architecture the conveyence of meaning and symbolism. This conveyence of meaning and symbolism or communication would be of an individualistic interpretation in that each observer or "user" would extract his own unique impression or message. From the outset of the project, I felt the opportunity or desire to create something which would evoke the feeling or message of flight. Another symbol is that of the form conveying the function of the activity occuring inside. This was a building that had a relationship with the mode of travel of flight. Interestingly enough, this concept did not achieve realization until the latter stages of development. I feel certain that my unsatisfaction or unfulfillment of this intention caused the discarding of the numerous solution attempts until the "right" one was achieved. At that point in time, I'm sure the due date factor stimulated a prompt resolution to this desire, but as for myself, preliminary design or development of a specific solution could not begin until the evolution of that "fulfilling" solution occured.

This seems to indicate a third architectural philosophy or possibly personal insight.
A design solution should not be a total resultant of functional needs optimally satisfied, but also must have, as a fellow student of mine put it, "divine providence" as an integrated part of the design process.

Relating back to my second design philosophy, in terms of achieving this symbolic or metaphorical conveyance, I feel confident as to the success of evolving a flight evoking piece of architecture. It may also be perceived in a more tangible faction of flight, possibly some type of vehicle, but that is up to the observer, for I believe it is not important what the architect attempted to convey, as much as what is actually interpreted or perceived by the "user".

The strength of a strong singular symbolic conveyance is the establishment of "identity". A significantly identifiable building became one of my initial goals in terms of what is desired at Evansville Dress Regional Airport; something to give the city of Evansville an introductory statement from which it can be remembered or affiliated with. The power of association! It is a common phenomenon; San Francisco and the Golden Gate Bridge, Paris and the Eifel Tower. I am not implying that this terminal would achieve such eminence, but that the principle of its relationship would be the same.

And finally, in retrospect of the project as an educational experience, many entities are brought to mind. The challenge of the size of the project was very desirable, yet it left me unsatisfied as to the degree of development or detail I was able to delve into and explore. The lessons and knowledge obtained from this testing of my personal philosophies were also invaluable. The remnants
of this educational endeavor are yet another ingre-
dient, another color added to my palette of experiences.