a study of
CLIENT/USER PARTICIPATION METHODS FOR THE DESIGN PROCESS

Exemplified By The Design Of A Firehouse For Wayne Township Fire Department, And The Development Of A Programmatic Booklet For The Design Of Firehouses

1985 Architectural Thesis by J. David Cook
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The success and enjoyment of this last year of architectural school must be credited to many groups and individuals. The first group that credit must be given to is the faculty of the College of Architecture and Planning at Ball State University. Individuals among this group who provided a great deal of guidance and support are my thesis critics Dr. Bruce Meyer and Professor J. Robert Taylor. For without their time and interest in me and my thesis, the successfulness of this past year would have diminished. Two other faculty members for which I must also give endless credit to are my studio professors—Dan Woodfin and Jack Wyman. Their assistance in time of confusion and despair provided a great deal of relief and understanding within myself and about my thesis.

Another group I would like to give credit to are the fire departments of Marion County who participated in my questionnaire survey. Those departments are Castleton, Pike, Speedway and Washington Township Fire Departments. Among this group I would like to credit the participation of the several hundred firefighters and their superiors who provided their input into this study. The individuals of this group that I would like to give the most credit are their respective chiefs: Chief Jim Curseaden, Castleton; Chief Chuck Berry, Pike; Chief William Erml, Speedway; and Chief Dave Thomas, Washington. For without interest in their departments and to allow me to explore their departments for my benefit as well as their own, the information of this study could not have been obtained.

I would like to additionally credit two individuals who were equally important in the success of this study. Mark Ray of B.A.S.E. Architects for his interest and time to discuss and review the development and progression of my thesis. I am greatly indebted to Mark for his interest and understanding these past nine months, which I hope to never forget or fail to give to others. The other person I am greatly indebted to for her patience, love and hard work is my girlfriend Julie Hoffman. For without those qualities in her, the relationship we share would have dwindled as my time in studio grew. I will always remember the time she has spent typing and proofreading for me, and I am forever grateful.

The final, but most credit must obviously be bestowed upon the Wayne Township Fire Department. As a group, credit must be given to the volunteers of this department for their input by answering my questionnaire. As a smaller group, credit must be given to the executive board members of the department who devoted an hour of time each month to participate in our "client/architect" meetings. They were very understanding and patient with me during these meetings. Their interest and cooperation in what I was asking of them provided me with the enthusiasm needed for these past nine months. The individual who deserves the most credit and thanks is Chief Richard Lamb. His interest and cooperation from the beginning provided a great deal of enthusiasm for my thesis. Without his permission and interest for others in the department to learn about client/architect relationships, this thesis would never have transpired.

To Chief Lamb and the rest of Wayne Township Fire Department, I greatly appreciate the help and cooperation you have given me these past nine months!
DEDICATION

The easiest decision for me in the past 23 years is the dedication of this book and the work that went into it. It would be a great dishonor not to dedicate this thesis to these two special people in my life. For the past five years, my parents have supported every decision I have made. They did not try to lead me, but supported my own thinking. Although my parents may not truly understand what these past five years have taught me, they have been most encouraging to be the best at what ever I was trying to become. The encouragement and love my parents have unselfishly given to me will never be forgotten. Even at times when I did accept their help with gratitude, I soon realized that their assistance was only for the betterment of my life. I truly hope that I can provide a sense of joy and pride in their lives. For their patience, examples, and endless love over the past 23 years, I dedicate this book to my parents Mr. and Mrs. Leon J. Cook.
SIGNATURES

Signatures of Approval

Mr. Bruce Meyer

Professor J. Robert Taylor

Professor Jack Nyman 8/12/85
ABSTRACT

The past year has provided me with a great deal of practical knowledge that I hope others may also benefit from. To understand the potential role of the client/user in the design process is vital for an architect who is trying to provide a successful solution to a client's problem. My thesis is two fold; first is the study of methods for architects to involve clients and users in the design process more thoroughly, and second to determine ideas appropriate for the design of successful firehouses. The latitude and depth of this study is evident in the design of a firehouse for Wayne Township Fire Department and the development of a programming booklet for the design of firehouses. This documentation of my conclusions and findings is a small token of the knowledge I have gained about client/architect interactions and the fire profession. I believe that this documentation of my study can be beneficially used by architects and fire departments ambitious enough to pursue the goal of a better architecture for both professions.
BACKGROUND OF THESIS

The need to involve the client/user in the design process is vital in order to solve the client's problems and to generate better design solutions. The extent of such involvement in the architectural profession is often by meetings that rely on verbal and listening skills as the main (if not only) source of communication between architect and client. Although these skills are a necessity in gathering information, the effectiveness is reduced if this method of communication is used only by itself. The use of this method of information gathering should be supplemented by other means of client participation methods to enhance the effectiveness of verbal communication between client/user and architect. In the architectural profession, the involvement of the client/user in the design process is often neglected because either the client believes the architect can do a "successful" project without the need for additional input, or the architect believes that he has compiled all the necessary information to design a "successful" solution for the client. The only end result of this neglect of client participation is a solution to a problem that does not satisfy, whether in part or in whole, the needs and desires of the client or the user. The more an architect can know and understand about a client and their problems, the more design alternatives (solutions) he will be able to produce, and ultimately, the end design will satisfy the client and those who use it. Just as the architect should know the client and user, they in turn should continually be involved in the design process to confirm or deny design solutions in order that they may be provided with a solution to their problem without producing new problems. These participatory methods are often effective ways to involve the client/user in the design process as well as provide the architect with other effective ways of gathering information necessary for successful designs.

Organizations are often represented by the buildings that they occupy. These particular buildings have recognizable characteristics that people passing by can associate with those people on the inside. An example of one of these organizations the public can associate with the people inside by the familiar characteristics of the building is the firefighting profession. The big red fire engine, dalmation dog, brass pole, large doors, big number, and firemen sitting out in front are all traditional elements of a firehouse that the public has learned to associate with. But the buildings to which the public now associates with the firefighting profession have drastically changed in characteristics over the two decades. Firehouses have turned more into "fire-garages". The brass pole has been removed for the more safer stairs (OSHA Regulation). Big red fire engines have changed to big green, white, or yellow fire engines. Dalmations are rarely seen around a firehouse. And the friendly inviting face of firemen sitting in front of their temporary home has given way to locked doors and a door bell to push for admittance. These changes in the building characteristics have led to the public not having the recognisable symbols for a group of people that they have always associated with in spirit and respected in heart. This lack of association has led to the loss of favorable thoughts and actions about the profession we have come to know by firefighters and the public alike. The cause to these problems is by many factors. The profession itself has changed dramatically from an exclusive club for men to a public servant with equal employment opportunities. This shift to a city organization has left the amount
of funds for elaborate firehouses drastically reduced. New technology has changed the organization into a profession trained for a diversified range of emergencies. The architectural profession also has contributed to this change. Architects may not investigate a client, such as a fire department, as they normally do because architects may feel they know all there is needed to know, or they rely on other poor examples as sources. Architecture as well has changed drastically in the past years, in that new municipal buildings are often outdated in style from other publicly viewed buildings being built at the same time. These causes are producing a general apathy and lack of respect by the public for these professionals who risk their lives for the saving of other lives and property.
The study I have conducted is a synthesis of investigating new client/user participation methods and the studying of the correct components needed for a successful firehouse. I believe that client/user participation strategies are a vital part of the design process in order for the architect to solve client problems and to generate design ideas. My thesis statement is: If client participation strategies are a vital design tool, then by using a variety of these strategies, design solutions to the problems of a modern firehouse will be established. Although this thesis is directed for a specific user group, the main principles of participation strategies could be used for any clientele to gain design information needed for a successful solution.
CHANGE OF OBJECTIVES

As I prepared for the nine months of my thesis project, I intended to concentrate on the development of client/user participation methods and apply them to the design of a firehouse. But as I progressed through the first three months, I soon realized the development and application of new methods was more complicated than I first anticipated, especially for being in real client/architect interaction for the first time. Although this area of my study seemed to be foreshortened, I discovered by research and results of my first participation method the need to educate the architectural profession about the necessary components needed for a proper firehouse. The results from the participatory methods used seemed to make me aware of the problems in the fire profession. This discovery encouraged me to try to develop a potential solution to these problems by using the results of my participation methods. To say I have developed a new architectural style for a firehouse is an exaggerated statement. But what I have accomplished is the development and investigation of client/user participation methods and then applied that gathered information to the design of a firehouse that attempts to solve various problems. The information and knowledge gained from this process is then compiled in a design booklet that architects and fire departments alike can use in the preparation and design of new firehouses.
I tested my thesis with the assistance of Wayne Township Volunteer Fire Department (WTFD), located on the west side of Indianapolis. Although the largest volunteer department in the world, the basic organization and operation is like that of any paid department. By using WFTD, and other fire departments around Indianapolis, I was able to test my ideas of participatory methods on a surrogate client and obtained results similar to a real situation. Meeting with WFTD’s board members, for an hour once a month during their board meetings, provided me with a reasonable time table to work with and to plan by. The fire department was a testing ground for my participation methods while the new firehouse was the vehicle for which to test my results and solutions. Although the department had previously completed an extensive building campaign of four new stations, this may have affected the results of some methods. However, the generation of new ideas through my design and educational experience of using an “architect” provoked renewed interest within the group.
IMPLICATIONS OF THESIS

The implication for my thesis is mutually beneficial to both the architectural as well as the fire professions. The architectural profession will benefit from my study in its methods and techniques of involving the client and user in the design process. This involvement will emphasize the importance of the client's problem. This study will also enlighten the architectural profession to the design criteria of firehouses. The design booklet may be used as a guide which will enable both architects and fire departments to work together with already established information in order to aid in the development of a solution that is successful for the needs of the client and user. The fire profession may also benefit from my study by its introduction to people outside of the architectural profession to some necessary procedures needing to occur within the design process. This may make fire departments aware of the fact that they should have a big part to say in the design of their new facilities. If fire departments feel they are not being involved or informed enough about their designs, this study may give a "scale" in which to measure their input on. Secondly, this study may give fire departments new insight into the basic problems that all departments are experiencing in the areas of morale, public image, keeping firefighters busy while on duty, and keeping volunteers interested enough to serve. Finally, this thesis may provide a guide that fire departments (not by themselves but along with an architect) may use to make better decisions about designing new firehouses.
Concluding Thoughts

Although my end product did not formalize as I initially intended, the end product I believe is richer in evidence of the potential of client participation strategies. If I had continued trying to develop new participation strategies, I don’t believe I could have formulated the results into as meaningful a synthesis as I did. The placing of less emphasis than intended on the development of new methods and more emphasis on using the results allowed the methods developed to become more informative in their application, which is indicative of the intended purpose. My thesis enables both the architectural and the firefighting profession to learn more about themselves as well as about each other. If forced to reevaluate my thesis idea from the beginning, I would have attempted to find a situation in which a client was actually considering building a facility in the near future. This would insure the purity of thought and a general interest in the whole process. The emphasis on just the developing of strategies or just a project is self-defeating in either instance. The combination of the two—to involve the client/user in the design process in several different methods and use their input to aid in the development of solutions to their problems—is the true meaning of my thesis.
The project that was used to test my thesis is a firehouse for the Wayne Township Volunteer Fire Department. Although WTFD was not considering building a new firehouse, they were willing to be involved in the process and share their feelings with me about their "dream" firehouse. The department is run on what is referred to as a "stand by volunteer system," where volunteers stay at the firehouse for four to six hour intervals and are then dispatched with apparatus to the emergency. This facility is intended to incorporate the traditional elements and characteristics of past firehouses with the needed "new image" of the present firefighting profession. This idea, and others, were derived from client/user participation methods used, client interaction with WTFD, and cooperation from other fire departments around Indianapolis. The intended purpose of the architectural style is to provide old and new elements of the firefighting profession with which the public could once again associate. The idea of exploiting the brass pole, big red engines, large doors, hose tower, large graphics and the color red with a standing seam roof, tan block and limestone will emphasize the tradition, pride and honor associated with the past and express the change of the present. Another design intent was to make the facility more residential in appearance to emphasize the firehouse image, not the "firegarage".

The "dream" firehouse was emphasized without a concern for budget at the meetings. This idea lead to a 30,000+ square foot firehouse with many "luxuries" typically not found in similar facilities. But in the attempt to solve basic problems confronting the fire profession, the luxury areas may provide a possible answer to the needs of firefighters.
### SQUARE FOOTAGE

**FIRST LEVEL**

<table>
<thead>
<tr>
<th>Social Areas:</th>
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</thead>
<tbody>
<tr>
<td>semi-private area</td>
<td>576</td>
</tr>
<tr>
<td>lounge area</td>
<td>672</td>
</tr>
<tr>
<td>kitchen</td>
<td>380</td>
</tr>
<tr>
<td>T.F. room</td>
<td>288</td>
</tr>
<tr>
<td>dining/multipurpose/game area</td>
<td>897</td>
</tr>
<tr>
<td>quiet room</td>
<td>294</td>
</tr>
<tr>
<td>coat room</td>
<td>84</td>
</tr>
<tr>
<td>vending area</td>
<td>56</td>
</tr>
<tr>
<td>mens restrooms</td>
<td>265</td>
</tr>
<tr>
<td>womens restroom</td>
<td>225</td>
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<tr>
<td><strong>Total</strong></td>
<td>3757 sq. ft.</td>
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<table>
<thead>
<tr>
<th>Exercise Areas:</th>
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<tr>
<td>racquetball court</td>
<td>800 sq. ft.</td>
</tr>
<tr>
<td>gym area (sauna, whirlpool, weight room)</td>
<td>1428</td>
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<td><strong>Total</strong></td>
<td>2258 sq. ft.</td>
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<th>Business Areas:</th>
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<tr>
<td>president's office</td>
<td>153 sq. ft.</td>
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<tr>
<td>conference area</td>
<td>323</td>
</tr>
<tr>
<td>records office</td>
<td>117</td>
</tr>
<tr>
<td>treasurer's office</td>
<td>170</td>
</tr>
<tr>
<td>district chief's office</td>
<td>1130</td>
</tr>
<tr>
<td>captain's and lieutenant's area</td>
<td>228</td>
</tr>
<tr>
<td>watch/report room</td>
<td>165</td>
</tr>
<tr>
<td>rest area</td>
<td>2392 sq. ft.</td>
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<th>First Response Area</th>
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<tr>
<td>apparatus bays</td>
<td>7176 sq. ft.</td>
</tr>
<tr>
<td>turnout storage</td>
<td>1121</td>
</tr>
<tr>
<td>slop area</td>
<td>190</td>
</tr>
<tr>
<td>general storage</td>
<td>806</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9393 sq. ft.</td>
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<th>Second Response Area</th>
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<tbody>
<tr>
<td>apparatus bays</td>
<td>7176 sq. ft.</td>
</tr>
<tr>
<td>turnout storage</td>
<td>815</td>
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<tr>
<td>slop area</td>
<td>132</td>
</tr>
<tr>
<td>general storage</td>
<td>8973 sq. ft.</td>
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**SECOND LEVEL**

<p>| | |</p>
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<tr>
<td>sleeping</td>
<td>1176 sq. ft.</td>
</tr>
<tr>
<td>mens locker room</td>
<td>1556</td>
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<tr>
<td>womens locker room</td>
<td>861</td>
</tr>
<tr>
<td></td>
<td>3533 sq. ft.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>mechanical</td>
<td>255</td>
</tr>
<tr>
<td>circulation</td>
<td>3284</td>
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<tr>
<td></td>
<td>3539 sq. ft.</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td><strong>Total square footage</strong></td>
<td>33,433</td>
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Subtotal: 29,897 sq. ft.
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<tr>
<td>Building Cost (33,47) sq. ft. x $65/sq. ft.)</td>
<td>$2,177,145.00</td>
</tr>
<tr>
<td>Fixed Equipment (5% of Building Cost)</td>
<td>851,194.35</td>
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<tr>
<td>Site Development (10% of Building Cost)</td>
<td>217,314.30</td>
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<tr>
<td><strong>Total Construction Cost</strong></td>
<td><strong>$3,041,653.85</strong></td>
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<tr>
<td>Movable Equipment (5% of Building Cost)</td>
<td>108,657.25</td>
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<tr>
<td>Professional Fees (7% of Construction Cost)</td>
<td>212,915.77</td>
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<tr>
<td>Contingencies (10% of Construction Cost)</td>
<td>304,163.35</td>
</tr>
<tr>
<td>Administrative Costs (2% of Construction Cost)</td>
<td>60,833.07</td>
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<tr>
<td><strong>Total Budget</strong></td>
<td><strong>$ 686,571.44</strong></td>
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<tr>
<td><strong>Total Project Cost</strong></td>
<td><strong>$3,728,225.29</strong></td>
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SECTION B-B  scale: 1/8" = 1'-0'
Concluding Thoughts

Although this solution is hypothetical, the ideas illustrated are as real as the problems they attempt to solve. The exploitation of elements are important because of the associations that the general public tends to make. The introduction of contradictory materials and limited palette of colors add to the character of the building. If confronted with the same situation another time, the size of the project would be greatly reduced to facilitate ideas relating to the use of the materials inside and the interior atmosphere. I believe the design ideas would have remained the same, but the need for such a large facility was unnecessary to express my ideas. This reduction in size emphasizes the flexibility of the design intent to work as ideas and not as a final solution. The methods of reducing the vertical scale of the building could have been investigated more. Although the scale is a lot lower than other examples observed, the need for more reduction is still desirable. However, with this firehouse there are many "givens" in the components of a firehouse that don't allow for easy reduction of scale. All in all, I am very satisfied with the outcome of this design solution and hope it may assist others in the design of similar facilities.
The first method to be discussed is a questionnaire. What are the objectives of using a questionnaire? To involve the architect in an investigation of his client and user to develop an effective questionnaire is one objective. Another being the desire to gain the most information in an unbiased way, that often occurs with the interpretation of verbal conversations. The last objective is to give the client/user the opportunity to express their opinions and ideas about problems the architect is attempting to solve.

The first objective is to involve the architect in a situation in which he must talk to clients and users that will in turn enable him to become familiar with the problems he is trying to solve. The second objective is perhaps the most important. The use of a good questionnaire allows an architect to gather the most consistent information, in terms of asking the identical question to more people, with the least amount of bias. This is important because an architect can bias the input he receives in an interview setting by various different manners. These biases alter the consistency of the information, which decreases the chances of understanding the true problem of the client. The last objective is to give the client/user a chance to express their opinion and to be apart of the solution to their problem. Many times the client/user has the solution to their own problem, but are often unsure of how to implement it in a useful manner. These solutions are often the ideas that architects are unaware of because they are not familiar enough with their clients. Another reason for this objective is to provide a psychological feeling of comfort for the client and user to be involved in the design of their new facility.

For questions 1-5 circle the answer that best applies.  
1. I am a member of (1) Castleton (2) Indianapolis (3) Pike (4) Speedway (5) Washington (6) Wayne (7) Other  
2. I consider myself a (1) Firefighter (2) Fireman (3) Fireperson (4) Firewoman (5) Other  
3. I consider the place I am in a (1) Firehouse (2) Fire station (3) Fire hall (4) Other  

For questions 4-53 please circle the response you feel best applies to your attitude about the statement. Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), Strongly Disagree (SD).
How is a questionnaire beneficial for a client? As mentioned previously, a questionnaire provides a psychological comfort for the client and user because they feel more involved in the design process of the new facility they are receiving. But more importantly, the questionnaire provides a latitude most people are familiar with, that is a chance to express their own opinion about something they are about to receive. The questionnaire allows a client/user to express their opinion in a manner that they do not feel intimidated to put down the "right" answer. The client can often find out more about his employees and their desires that can change the direction of a design for an architect.

More importantly, how can a questionnaire benefit an architect? As mentioned before, the information an architect acquires for putting together a questionnaire is also information he would have had to gather for the design anyway. But now that this information is obtained, a questionnaire provides a verification method of the attitudes and ideas that the architect may have heard from interviews. The questionnaire also allows the architect to check his preliminary design ideas. By supplying his own ideas to a design solution, as part of the choices in the questionnaire, the architect can begin to verify possible design ideas. This allows the architect to explore the effectiveness of his design intentions before he commits himself to a solution that would not satisfy the client or the user. Obviously, the most important benefit of using a questionnaire is to gain usable knowledge of your clients' opinions in order to avoid having ideas that are totally against the client/users' wishes and desires. This is not

Please answer the questions in the space provided.

What would you like in the way of an exercise program?
(type of room, equipment, etc.)

What would you like in the way of a day room (recreation area)?
(type of room, pool table, etc.)

What type of firefighting training would you like to have knowledge of or more indepth training in?
(Hazard Materials, repelling, etc.)

What could be done to improve the public image of the firefighting profession?
(Mock disasters, sell smoke detectors, etc.)

For a volunteer department, what incentives are needed to stay in service at all times?
(Do more than just sit around, etc.)

What could be done to encourage new members to join a volunteer department?
(Have a clean firehouse, have a friendly atmosphere, etc.)

What needs to be done to raise the morale in this department?
(Building inspections, competitive tournaments, etc.)

to say that the architect using a questionnaire should not verify the results with the client/user in order to clarify unclear areas, or to use the results as the only source of information. The architect should be able to distinguish the appropriate design ideas from those that are not appropriate and not base all of his design decisions on the results of questionnaires.

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The second method of participation is the use of styrofoam cube models constructed by client/users, followed by a verbal description of their models. This method is a "hands on approach" to the participation strategies. By providing for the client/user a fictitious or the actual site in a model base form, you can allow the client/user to use styrofoam cubes to build a representational solution as they imagine it. Scaled objects to represent cars, tree, etc. can aid the participants in this activity. Toothpicks are one method for fast and easy fastening of cubes together. The use of adhesive stickers allows for an expression of windows, doors, name of rooms, and the like. After a given period of time, the "architects" of the solutions explain their intentions to the others. The objectives of this method are to lessen the formalities of a client/architect relationship, to facilitate the expression by the client/user of their ambitions (both three dimensionally and verbally), and to establish a sense of importance to issues for the architect.
The first objective—-to lessen the formalities of a client/architect relationship—is intended to reduce the psychological barriers that client/users may have of talking with an architect. This method may appear childish at first glance, but the participation and involvement is quite the opposite. Generally, the architect does not need to generate ideas, but acts as an observer of the situation. Furthermore, the verbal description of each solution emphasizes the acceptability of verbal discussion necessary for a good architect/client relationship. To lessen the formalities and preconceptions that most clients have about architects is vital in order for the architect to successfully solve their problems.
The second objective—expression of ambitions in a threedimensional and verbal form—is useful to both parties involved. When the client/user build these models, it allows them to express their ideas in a visual manner. This is helpful for an architect to see visually ideas that have been conveyed verbally. These visual aids are often elementary in appearance, but they are usually quite extensive in content. Clients and users alike have solutions to their problems; but, until the opportunity to express their ideas in threedimensional form, these ideas are left to be expressed in unclear verbal methods. The three-dimensional form compliments the verbal communication by showing the architect what he is trying to express.
An architect must examine these methods of expression (by means of slides and tapes) to fully understand the importance of ideas or solutions that the client is trying to convey. This is the final objective of this participation method. To establish a sense of importance to issues may allow the architect to put priority on problems expressed by this participation method. For example, if certain rooms are either undersized or oversized, it is possible that this pertains to the importance of activities taking place in these rooms. This observation may also pertain to the amount of time spent in each room. This method is to call the architect to the attention of the degree of importance that clients are giving to certain issues. This provides a system by which an architect can check previously expressed issues and their relevance to other issues.

What are the benefits of this method to the client/user? This method allows the client/user to express his opinions in another way that does not rely on strictly verbal communication. This is an
advantage because most people often have a difficult time communicating ideas verbally to others. Another benefit to this method for the client/user is the chance to "physically imagine" how their ideas could work. To construct their ideas give clients an opportunity to see what they have been trying to verbally communicate. The client/user can also benefit from this method by the close association to the architect helping them. By expressing their ideas in this manner, the ease to express other opinions further in the design process will hopefully be more prevalent. An architect can also benefit from this participation method. By using this method, an architect can understand a client/user's verbal intentions by his three-dimensional illustration. The organization of certain rooms may provide an understanding of how the facility should work theoretically. The importance of certain areas is illustrated physically when not expressed verbally. Another benefit to the architect, is the further understanding gained by the client/user expressions of the solutions to the problems trying to be solved. These benefits, and others, provide the architect with a better understanding of client/user problems and solutions, and a better client communication when used to supplement previously gathered information.
Functional Evaluation

The third participation method is called a functional evaluation. This method is accomplished by the architect presenting two models of each different preliminary design for the client/user to evaluate on the basis of solutions to previously determined functional problems. When an architect has generated different alternative solutions, he must ask the client and user for their opinions of the possible solutions. This can be done by the use of simple models and an evaluation sheet. The architect constructs two models of each solution; the first one is to show the relationship of the first floor to the other floors. This can be accomplished by fastening a plan of other floors above a plan of the first floor by a simplification of structure or other continuous vertical elements. Labeling rooms, drawing furniture and marking circulation provides an easier evaluation of the solution by the client and user. The second model is an abstract representation of the form of the building. By building the walls directly on top of the floor plan, it begins to convey the reality of the developing building. By not covering the building, by means of a roof, the client can easily associate this model with the previous one for interpretation. The next step of this process is to have the client/user evaluate the solution for different categories as well as an overall solution. The architect should choose the categories that he believes are the most appropriate for him to gain the most input from the evaluation of the client/user. This method is used for the ranking of different solutions to the same problems according to the acceptability of the client and user.
The objectives of this method are to provide the client/user with a view of the functional design which is easier to understand, provide the client/user a method by which they can determine the most appropriate functional solution to their problems, and to give the architect a reliable way to evaluate his functional solutions by client/user input.

The first objective is elementary in thought, but often is overlooked by many architects in practice. In order for a client or user to give input about a design, the architect must present his ideas clearly. The plan of a building can be easily understood by most people, but when more than one level is present, the relationship between floors is lost. In this participation method, the objective is to represent the plans of the building in such a manner that there is a relationship in position between floors. This in turn can make the function, special relationships, and circulation more readably understood. The other model used to achieve this first objective is a method to illustrate function while defining space. By using the same plans, the design can enclose the plan by constructing walls to the appropriate scale without windows or doors. This is easily accomplished and provides a different appearance to the two-dimensional plan. By not applying a roof, this model allows the client/user to understand the plan drawings in a three dimensional way. The ease of roll playing is much more prevalent in this three-dimensional model than in the previous one. Without understanding the architectural drawings easily, the capability of the client/user to understand the potential of the solution is lost.
The second objective is intended to allow all of the client/users a method to evaluate the solutions in a consistent manner. This objective is important because the client/user is instructed to evaluate the solution on specific categories that the architect desires instead of each client/user basing the solution on their own criteria. By analyzing the solutions, the client/user can compare different solutions to each other and rank them accordingly. This part of the functional evaluation is intended to involve the client/user in a participatory method to analyze the architect's functional solutions. Functional evaluation enables the client/user to provide the architect with needed input on whether or not solutions are appropriate in a manner that is easy to understand.

The final objective is to aid the architect in receiving reliable feedback about his solutions. Often a client or user will not express their true feelings about a functional solution because "the architect knows what he is doing". But he sometimes doesn't know what he is doing! This method forces an architect to express the potential and reasoning of a certain solution if he believes it is an appropriate solution. The rating system can tell an architect which solution is "liked" the most by the clients. Then by asking probing questions to why one solution is preferred over another, the client/user can express the major factors determining their selection. This method allows for more feedback possibilities if an architect is eager enough to ask why. If an architect were to develop three or four functional solutions to the same problem, he could easily find out the best of each solution for further development, if this method of evaluation was applied.
What are the benefits of this participation method to the client? Very easily put, this method allows the client/user a means to grade and compare different solutions in a constant and understandable way. Before using this method, the client is often at the mercy of the architect to explain how the plan works. The clients often become confused when they are trying to understand the three-dimensional quality of a building expressed in a two-dimensional manner. This method provides the client the information necessary to determine the organization of various rooms that are appropriate in relationship to function, need, circulation and roll playing. By better understanding of the solution, it is easier for the client/user to evaluate the solutions on a given criteria. This evaluation gives the client/user the opportunity to evaluate solutions in a reliable and constant manner that expresses their true feelings about the functional solution to their problems. Functional evaluation methods also allow for efficient client/user participation opportunities. By evaluating the architect’s solutions, in familiar client terms, the client/user provides the input that is often absent in normal client/architect interactions.

What are the benefits for the architect who uses this method of client participation? It gives the architect the opportunity to express his ideas in a more understandable manner for his clients. This method allows for an architect to have a reliable source of input about the ideas he is developing in order to determine their pertinence. Functional evaluation provides the architect with a basis for further questioning to why a solution is more successful than another. This further questioning can produce better understanding of the client and their activities. For an architect to have accumulated numbers to
determine the pertinence of a solution is more reliable than having a client or user say they like it without comparing it to other solutions. The architect must know appropriate solutions before presenting them to his clients. To rely on the evaluation for the final decision is wrong! But to use the evaluation as an aid to better understand the final design and to generate discussion to make the final solution better, is the purpose.

Concluding Thoughts

These three participatory methods are not refined by any stretch of the imagination. My intended purpose was to explore and discover the possible potential of these methods. I believe I have successfully accomplished this by laying a foundation for which others to build upon. If I were not to have spent my time on three different methods, the research of one method would have been more substantial. But this was not the purpose of my thesis. The methods explored represent a wide range of possible applications. Each method has its advantages and disadvantages.

The questionnaire was by far the most interesting for me to study. This method took the most work, but also provided the most reliable information. To write a good questionnaire requires the same, if not more, client information than solving their problems architecturally. The content of my questionnaire was very thorough, but the quantity was too lengthy. I tried to explore too many questionnaire methods at once. A questionnaire is hard to compile, but it is very beneficial as a finished product, both from the results and the information gained of what was asked. If given the chance again, I would like to develop other questionnaires.

The styrofoam models and descriptions are an interesting method to learn client/users intentions. I should have spent more time analyzing this method more than any other. The hidden idea of each model and description required a great deal of investigation. Although limitedly used in my thesis, I could see this method being used extensively from the organization of the site, to the layout of individual rooms. To give the client/user the opportunity to construct
their ideas and to explain them is the most informative and interesting part of any architect/client relationship. This method of client participation provided me with information about the importance of certain issues. If I were to implement this method in the future, I would consider using furniture and more scale sketches in order to provide the participants a better representation to scale. Although not studied as in-depth as other methods, I believe that this method has endless possibilities for providing vital information to an architect if applied.

The last method developed--functional model evaluation--provides a good check for an architect, but may not be practical in a real application. To make this method successful requires the development of several different solutions to provide a good comparison. Although this method may not be practical in application, the ideas should be understood for further use and development. For a client/user to compare more than one solution to their problems, this can provide the architect a substantial amount of information to why one method is more desirable than another. This method could have been improved by explaining the intent of each solution. But part of the purpose of this method is to have the client/user evaluate the functional solution by what they see and not the verbal communication of the architect. Allowing client/users to see possible solutions provides a stimulus for them to suggest additional ideas that can make the final solution better. With this method, as well as the others, the architect is the professional. He must not rely totally on the input received through these methods and others. He must know the correct direction the design should follow and use these methods to provide additional ideas and checks of his own ideas. The client and user often have the solutions to their own problems, it is the architect's responsibility to aid the client and user in communicating their ideas to him. These ideas in turn can be interpreted and applied by a competent architect to solve their problems in a respectable architectural manner.
As a result of my study of client participation methods in the design process, the information obtained for the design of the firehouse in my thesis is compiled in a useful booklet. This booklet is one product of my past year of study. The Programmatic Booklet for the Design of Firehouses is intended for the use by both architects and fire departments alike. The purpose of this booklet is to provide both professions a “starting point” to which the culmination of a successful firehouse as the end product. I hope that this booklet may provide inspiration for fire departments and architects together to restore the architectural and public image that once adorned the fire service.
A Programmatic Booklet
For The Design Of Firehouses
This booklet was compiled for the men and women of the firefighting profession who risk their lives to save human lives and property of those they do not know. Most importantly, this booklet is dedicated to those firefighters who must cope with the traumatic shock of failure and helplessness when confronted with the loss of life and property.

Too late

A Chicago firefighter removes the body of an unidentified child from an apartment fire that killed a mother and four other children in Chicago Sunday morning.
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This booklet is intended to aid both designers and fire departments in the process of designing a firehouse. The information in this booklet are the ideas and goals that should be reached in the final product. The information is void of square footages and sizes due to the fact that all firehouses are not going to be the same size, but the desired needs and qualities will be.

Firefighters are the best individuals to ask for design ideas, goals, and criterion for the facility they work and live. Within this process is the need to involve the firefighters using the firehouse for their ideas and inputs. Enclosed is a sample questionnaire that allows the firefighters to give their input to this process.

Finally, this booklet and the process for designing a firehouse are not intended to be used by just the designer, or just the fire department. But the designer and fire department should work in collaboration together in order to design more than just a "glorified garage" where men and women live and work, but a firehouse that is functional and livable.
 OBJECTIVES

- provide insight into the firefighting profession
- involve the users in the design process
- introduce the needs and desires of firefighters
- provide points of discussion for both designer and fire department while in the design process
- provide the information needed for the design of a functional and livable firehouse
The organization of fire departments slightly vary depending on whether they are paid or volunteer. A volunteer department involves an additional branch to the typical army type ranking system common to the firefighting profession.
Function
must allow ample area to drive the apparatus in and out of the firehouse, visibility for both firefighter and public is essential for safety in an emergency situation as well as coming back to the firehouse, flashers and identification for the firehouse should be clearly marked and located in appropriate areas to aid in providing awareness to public.

Quality
The site should include green areas for firefighters to enjoy and maintain, which also could assist in reducing the "garage" type image, if parking and landscaping are visible, the hesitation of the public to visit the firehouse and better understand the department could be reduced.
Image
the most important issue of the exterior, what does the building need to say to the public, each department will have their own ideas and desires about what to communicate to the public, the image should be one of: a public building where its people and purpose are trained and ready to serve, a friendly image that conveys to the public that these people should be seen more than just during emergencies, this group of people deserve respect more than just after a fire, and that these people do more than sit around and watch T.V.
Also involved in the image is the need to express the two functions evident in the design problem, function of the fire department and the livable portion of the firehouse and how they are associated together.

Scale
the need to express scale in a human way is critical, the functional area is typically out of scale to the residential scale of the living area, the solution to this problem should be carefully considered along with the image the designer and department are trying to communicate.
Function

to house both people and the equipment necessary for the purpose of responding to emergency situations placement of living quarters and "garage" in a way that neither one dominates the other, while creating a highly functional building. living quarters should provide firefighters with a comfortable and interesting environment needed for the time spent waiting, which is prevalent in this profession. the living quarters are the human part of the firehouse that provides the men and women an opportunity to be ready for a run and also enjoy the comforts of home or a social organization. the storage area is needed for the apparatus and equipment needed for the possible emergency situations in the area. the storage of the equipment in a neat and orderly manner is crucial to the image and efficiency of the department.

Zoning

three zones are evident within a firehouse: public, semipublic, and private. the combination of these three zones are important to the function and image of a firehouse. the public should not be able to walk directly into the private or semiprivate areas. the watch area should be a control point for visitors to the firehouse. the use of semiprivate zones as buffers for the private zones should be used to reduce the use of walls in order to divide zones.
Circulation
the most important goal of the firehouse is the
direct access to the apparatus, but often is
difficult to achieve. circulation to apparatus
should be direct, whether vertical or horizontal.
the path traveled should have as few obstacles
as possible (i.e. steps, doors, etc.) fast
response time is the desire of a fire department.
the more efficient the sequence of the fire-
fighters to the apparatus and to the street the
better the response time. this sequence of
apparatus to street should be considered also as
the most direct without obstacles (i.e. turns, etc.)

Implication For Design
To provide a functional and pleasant atmosphere
that satisfies the needs of both men and equipment.
the interior should exemplify the professionalism
of the department with cleanliness and functionalism.
the interior should invoke the unity and friendly
atmosphere of the profession. although the
building is public in nature, the need for privacy
from direct public access is critical in many areas.
expansion is a key issue for a department.
both apparatus and living areas should have the
potential of expansion. future areas should be
planned for
□ ROOM REQUIREMENTS □
Function
storage of fire apparatus and all needed materials for both man and machine to perform the firefighting/rescue duties that are possible in the area

Time
30-40 seconds in an alarm situation at any time during the day or night, cleaning, polishing and checking of all apparatus and equipment once a day, after a run washing, cleaning, preparing for the next run, used more during colder months of the year for these activities

Furniture/Equipment
hose storage racks, tool storage, slop sinks, control buttons for doors

Special Features
cleanable walls because of the diesel fumes, 1½" hose connection for washing and refilling of apparatus, battery charger, extra large floor drains, drive through bays, thermally insulated doors, 14' wide openings 12'-14' high openings, bay dividers during winter months to improve heating efficiency, 14' high ceiling, column free floor space, exhaust holes indoors

Ambience
general purpose lighting while working, minimal lighting during the night, alarm situation at night should provide general purpose lighting, but not harsh, rely on natural lighting when possible, maximum ventilation during alarm situations, comfortable working temperature during winter months, rely on natural ventilation when possible to exhaust fumes and musty odors

Adjacent Spaces
turn out gear storage, slop room tool & maintenance storage, supply storage (chemicals, extinguishers, cleaning agents) watch room, air tanks storage, large storage area (ladders, ropes, mowers, 50 gallon drums)

Implications For Design
make the "garage" type area as clean and neat as possible to enhance the professionalism and image of the firefighting profession, thermal conditions are important to the cost efficiency of the department, provide opportunities for public to see "red fire engines"
Turn Out Gear Area

Function
storage of turn out gear between shifts (helmets, boots, coats, gloves, bunker pants, nomex hoods) secured area for prevention of theft of personal gear, cleaning of gear after a fire

Time
should be accessible at all times to retrieve gear before and after shifts, after a fire run gear will be cleaned and hung to dry

Furniture/Equipment
individual storage units for proper hanging and drying of wet and smoky gear, shower area to wash off dirt/debris after a fire

Special Features
operable windows to provide greater ventilation potential, large floor drains

Ambience
extremely good ventilation to exhaust odors and to provide an adequate drying environment, heating and air conditioning should be like that of the apparatus bays, lighting should be by switch or timer to prevent wasting energy

Implications For Design
to provide a neat and orderly means to store and air out gear, this will prevent odors in the apparatus bays and an organized storage system to improve the look of the apparatus bay and image of the firehouse

Adjacent Spaces
apparatus bays, locker rooms
Function
area used by the group for the purpose of occupying the time between runs. Multifunctional area that could be considered the "family room" of the firehouse. Various types of activities can occur in this area (i.e., playing pool, ping pong, cards, watching T.V., reading, socializing with firefighters, friends, visitors, doing paper work, preplanning & reports.

Time
theoretically could be used 24 hours a day. Used mostly during the day and evening as a place to "pass the time" could be used for informal group meetings. Could also be used after emergency runs for debriefing and/or "coping" with the situation.

Furniture/Equipment
comfortable sofas, lounge chairs. Multipurpose table and chairs, ping pong and pool tables, dart board, T.V., VCR, stereo system, reading lamps, carpeting

Special Features
multipurpose area, patio area, good view of street, abundant natural light

Ambience
temperature level should be appropriate to induce activeness and not sleeping. Lighting is as diverse as the activities, use natural light to enhance openness of the space, views out should be encouraged to add to the activities of the area, inward focused.

Adjacent Spaces
kitchen, dining, apparatus bays, outside patio, bath rooms, public, watch area, close association to public and apparatus for image and functional reasons.

Implications For Design
to provide an atmosphere that is conducive to reduce the negative affects that accompany the "waiting" area should provide an optimum situation for socializing & group interaction. When public visits, this area should enhance the character of the profession. Togetherness and activeness are ideas to express in the design of this area.
Quiet Area

Function
reading, studying, visiting with guests, this area could also be used for private conversations and counseling for firefighters coping with a fatality run, not meant as a "quiet area" to sleep in.

Time
anytime day or night when privacy is desired or needed.

Furniture/Equipment
sofas, lounge chairs, reading lamps, social tables

Special Features
sound eliminating materials, views outwardly focused, natural light to enhance the pleasantness of space.

Ambience
light levels for reading and personal conversations, speaker system with volume control, H.V.A.C. should be controlled from within area for personal comfort and control.

Adjacent Spaces
location of area should be considered carefully to consider privacy, reduce noise, and provide outward views.

Implications For Design
to provide an area that can allow individual or small groups to have privacy from the large group, this area should not be considered an area to leave the social unity of the group because the individual does not like the group.
Function
control point for visitors coming into firehouse, central point for communication, place to fill out report sheets, point of confirming emergency runs before leaving, center of information for all buildings in the district, check in/out point for firefighters, posting of important information for firefighters

Time
preferably manned 24 hours for any emergency that comes to the firehouse, any time an alarm sounds the responding men should be able to receive information concerning the emergency run

Furniture/Equipment
writing surfaces while being seated, phones (public, direct line to headquarters), restroom, bed area, filing cabinets, map files, district map posted on wall, intercom system, bulletin board, typewriter, alarm equipment

Special Features
control of lighting in bays, bay doors, flashing lights at the street, windows should be designed for views while being seated, unobstructed view of both street and apron area, emergency power

Ambience
temperature should be located in the room, H.V.A.C. should be similar to that of a residential house operable windows to allow individually desirable ventilation, lighting that is conducive to reading and writing

Adjacent Spaces
apparatus bays, circulation to apparatus, entry to firehouse, partially accessible to social area and business area

Implications For Design
provide a professional first image for the visitor to the firehouse, and area that is used extensively as the nerve center of the firehouse, should be a vital part in the process of an emergency run, pleasant place for a person to stay without feeling confined.
Business Area

Function

to provide both public and private offices for the diverse organizational system of the fire department, public office spaces for the fire service superiors (i.e. captains, lieutenant, etc.), private office spaces for the organizational superiors (i.e. chief, president, vice president, treasurer and secretary for a volunteer department), used for report writing and paper work.

Time

use is varied both in length and hour of day because of the work load and the individual

Furniture/Equipment

file cabinets, desks, chairs (both work and visitors), copying machine, typewriters, computer

Special Features

book storage, conference room, secure area to store private documents

Ambience

lighting levels to aid the tasks of reading and writing, a professional appearance conveyed to public, H.V.A.C. should be like that of an office in order to provide a pleasant work environment H.V.A.C. settings should be set with the group in mind and with controls having limited access for change

Adjacent Spaces

watch room, social area, public entry to firehouse

Implications For Design

provide an area that is business in appearance for public visiting, close association to social area to lessen the psychological distance between the normal firefighters and their superiors, this area should not degrade the firefighters when coming to the office of their superiors, also, this area should not intimidate the firefighters, but imply respect for their superiors
Function
semi-private sleeping area, besides sleeping this area should provide quick/safe access to apparatus during alarm situation, bunker pants should be ready next to bed, privacy is not an issue in the sense of male and female, but is an issue in the sense of noise and light. Each piece of apparatus should have its own sleeping area for its crew to prevent unnecessary wakeings during the night, this area could also provide a place of privacy, if needed, during the day.

Time
mostly used after 11:00 p.m. but could be used during the day for privacy, after alarm at night reentering room and going back to sleep should be considered, time of waking could be varied depending on the amount of rest during the night.

Furniture/Equipment
bed, night table, night light for reading, partition devices for light and noise, private storage area, area for turn out gear in ready position next to bed.

Special Features
phone & intercom system to watch area, alarm, speakers and alarm lights that considerately wakes one up without the intense noise and light that adds to the shock of the alarm situation.

Ambience
comfortable sleeping environment, low noise level, light level should be low voltage, but enough to walk around, in an alarm situation lighting level should increase enough to light all the floor, harsh light in an alarm situation should be avoided to allow time for adjustment.

Adjacent Spaces
apparatus, locker, restroom areas.

Implications For Design
provide a comfortable place to sleep that is absent of the noise and light that is evident in group sleeping areas, also to provide a more affective waking system to reduce the anxiety of the situation.
 Locker Area

Function
shower and locker facility for the use of firefighters to clean up and store their personal belongings, two different locker areas for the different sexes, privacy from public is important

Time
before and after duty, heavy use after an emergency run, exercise, and in the mornings

Furniture/Equipment
lockers that are securable, have proper ventilation for the storage of towels and exercise clothes, storage area should provide hanging devices, benches, showers, toilets, sinks

Special Features
tile floor for wet areas and carpeted flooring for locker area, materials should be easy to manage and disinfect, speaker and telephone intercom systems from watch room

Ambience
good ventilation to enhance drying, temperature and humidity controls that are appropriate for human exposure in a locker room, good acooustical qualities to accomidate speaker and alarm systems, natural light could be introduced but not at the expense of exposing the people, multipurpose lighting that enhance the flesh tones

Adjacent Spaces
sleeping area, exercise area, easy access from turn out gear room for immediate use of bathing facilities after a run

Implications For Design
provide a functional facility that has an atmosphere more indicative of the user than a normal locker room, ease of cleaning and dampness should be taken into consideration when choosing materials, circulation to and from apparatus bays should be direct as possible, and without exposure to public or visitors
Exercise Area

Function
multiexercise facility to encompass a large range of physical exercises to aid in fire-fighting, weight lifting (both free and machine types), stretching, aerobics, pushups, situps, chinups, exercise bike, exercise machines, etc.

Time
a paid department an established amount of time is set aside in the morning, volunteer departments would use this area at their own desire, unless a structured program is established and encouraged.

Furniture/Equipment
free weights, weight machine, chinup bar, situp bench, exercise bike, exercise machines, areas for jumping rope, aerobic exercises, and stretching

Special Features
sauna, whirlpool, racquetball court, basketball, volleyball

Ambience
ample ventilation to exhaust odor and moisture, lighting should be general in application, natural lighting is more desirable, H.V.A.C. should be regulated according to the exercise conditions, alarm and intercom system should have volume control within the room

Adjacent Spaces
chower area, locker area, outdoor exercise area (ie. track, fitness trail, etc.)

Implications For Design
provide an area that provides the possibility of many exercises without creating a gymnasium type atmosphere, exercise is essential to this profession, and this area should emphasize this importance and encourage their use of this area.
Dining Area

Function

to provide an area for eating individually as well as a group, could also function as a multipurpose area when not needing as an eating area (i.e. group meetings, business area when needing a table, social area, etc.)

Time

no specified time of use because of the multipurpose idea, heavy use periods for dining during lunch and dinner.

Furniture/Equipment

moveable tables and chairs for multipurpose use

Special Features

moveable seating that could be brought in for group assembly situation, views to the outside

Ambience

multipurpose lighting to match the function of the space, H.V.A.C should be oriented for groups of people, temperature & humidity setting should be comparable to a residential environment, controls for temperature should be placed in the area with controlled access, sun lit area

Adjacent Spaces

kitchen, storage, social area, garbage receptical

Implications For Design

to provide an area that can serve more than purpose, atmosphere should be as pleasant as the social area for group interaction, the "dining" characteristics should not be emphasized.
Function
preparation of meals for one person up to a
fund raising dinner (ie. fish fries, pancakes,
etc.), kitchen is less used in a volunteer
department than in a paid department

Time
at all regular eating hours, but a constant
use for small social drinks (ie. coffee, cokes,
etc.)

Furniture/Equipment
ranges, dishwashers, refrigerators (1 for each
shift in a paid department), top of stove hot
plates, microwave, plenty of storage for each
shift, large sinks for food preparation and
cleaning up afterwards

Special Features
special precautions against accidental fires
because of neglect to turn cooking off when
leaving for an emergency, materials and
equipment should be easy to clean and maintain,
floor covering should take heavy traffic and
spillage

Ambience
good ventilation for cooking odors, heating &
air conditioning should be controlled from
within room for comfort, lighting should be
both general and task, operable windows for
controlled ventilation

Adjacent Spaces
dining area, social area, trash recepticals,
outdoor patio

Implications For Design
provide an area to serve the diverse
cooking habits for a firehouse, ease
of cleaning is essential for the
appearance of the area, public may be
shielded from this area to avoid public
exposure to "dirty dishes"
This questionnaire is meant to provide an example of the type of issues needing to be addressed by the designer and the department. To develop a firehouse, these types of issues, and many others are important to discover in order to design a firehouse that is functional for the department and livable for the firefighters.
For question 1-3 circle the answer that best applies.

1. I am a member of [ ] Fire Department.
   (1) Castleton (2) Indianapolis (3) Pike (4) Speedway (5) Washington
   (6) Wayne (7) Other _______________

2. I consider myself a [ ] Firefighter (2) Fireman (3) Fireperson (4) Firewoman (5) Other
   _______________

3. I consider the place I am in a [ ] Firehouse (2) Fire station (3) Fire hall (4) Other
   _______________

For questions 4-53 please circle the response you feel best applies to your attitude about the statement. Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), Strongly Disagree (SD).

4. The image of firefighters is good in the eye of the public. ____________________________
   SA A U D SD

5. Firefighters get the respect they deserve. ____________________________
   SA A U D SD

6. An annual public invited mock disaster training drill is a good idea for both my training, and the public image of the Department. ____________________________
   SA A U D SD

7. The image of the firefighter would be improved if they spent more time in the community while on duty. (example: building inspections, giving out emergency phone number stickers, selling smoke detectors, etc.) ____________________________
   SA A U D SD

8. Firefighters should be seen by the public while on duty more than just for emergencies. ____________________________
   SA A U D SD

9. To see firefighters living and working within a firehouse will improve the image of firefighters. ____________________________
   SA A U D SD

10. Firehouses should be a visual focal point of the community. ____________________________
    SA A U D SD

11. After a fatality run, I could use help dealing with the situation. ____________________________
    SA A U D SD

12. The men and women at a firehouse could be compared to a fraternal or social organization, etc. ____________________________
    SA A U D SD

13. A firehouse should have an inviting appearance to the public. ____________________________
    SA A U D SD
14. A map of our district mounted in a visual area (apparatus room, etc.) would be a great asset.
15. Theft is a problem at our station.
16. Vandalism is a problem at our station.
17. The doors should be locked during the day to our firehouse with only supervised admittance. (Keys, code system, etc.)
18. Each man should have an individual area to sleep in, versus a group sleeping area.
19. The officer in charge of a particular shift should have his own room to sleep in.
20. I would like to have a bed while on duty that is not used by men on other shifts.
21. A place for privacy is needed at our station.
22. The use of the T.V. is a major source of conflict at our station.
23. Voluntary training sessions while on duty would interest me more than mandatory training sessions.
24. In a volunteer department's fire station, I would rather cook than to go out to eat while on duty.
25. An exercise program should be a part of every firefighter's duties.
26. A microwave would increase the group use of the kitchen.
27. As part of a volunteer department, I would spend more time at the firehouse if a regular schedule of activities were planned during my shift.
28. Shower stalls should be individual and not a group stall.
29. Smokers at my firehouse bother me while I am on duty.
30. There should be a separate space for smokers in my firehouse.
31. A firehouse should be a social environment, at least in part.
32. More privacy is needed at our firehouse.
33. Firefighters should have a say in the design of their firehouse.
34. After a fatality run, I deal with the situation on my own about the same as everyone else.

35. A firehouse should not be recognized for what it is, but should blend with other buildings around it.

36. Visitors of on duty firefighters should be encouraged at our station.

37. While on duty, everyone should have a similar dress uniform. (example: same shirts or hats or pants, etc.)

38. All men of a fire department should have the same style and color of turn-out gear (excluding captain's & chief's helmets).

39. Whether or not a firehouse is interesting to live and work in is a result of the building itself.

40. Life in a firehouse is interesting based more on the activities than the building itself.

41. I feel a close association with the other men and women on my shift.

42. I have a good understanding of today's building materials and their uses and hazards.

43. My training is adequate for me to handle most emergencies that I am faced with.

44. Turn out gear should be stored in a room adjacent to the apparatus instead of on hooks in the apparatus room itself.

45. In a volunteer department, turn out gear should be kept at the station.

46. Every shift should have certain cleaning duties assigned.

47. Instructed training during on-duty hours should be a regular occurrence.

48. A T.V. area should be separate from the rest of the day room.

49. I should be encouraged to exercise while on duty in order to prepare myself for any emergency.

50. The kitchen in our firehouse is not used as much as it should be.
51. A voluntary exercise program should be a part of every shift's activities.
52. Athletic tournaments with other departments are a good idea for morale.
53. Between runs, time should be spent doing activities to help improve my firefighting skills and improving the public image of firefighters and not just watching T.V.

For questions 54-70 please circle the number to the response that you feel best applies to your attitude about the statement. Or give your response on the line provided next to "other".

54. The T.V. shows watched at our firehouse should be selected by
   (1) First come, first serve basis
   (2) Majority vote
   (3) Sign up ahead of time
   (4) "Drawing out of a hat"
   (5) By some other method

55. A firehouse should be cleaned once...
   (1) a shift
   (2) a day
   (3) every two days
   (4) a week
   (5) less frequent than once a week

56. While on or off duty I exercise to help build my firefighting stamina
   (1) Regularly
   (2) Frequently
   (3) Occasionally
   (4) Rarely
   (5) None of the time

57. How many people should sleep in a given bunk room/bedroom?
   (1) 1 (2) 2 (3) 3 (4) 4 (5) 5 or more

58. I would like to see the Chief at our station...
   (1) Regularly
   (2) Frequently
   (3) Occasionally
   (4) Rarely
   (5) None of the time
59. Relative to other professions, firefighters' status should be ranked
(1) 5 high (2) 4 (3) 3 (4) 2 (5) 1 Low

60. Relative to other professions, firefighters' status are actually ranked
(1) 5 High (2) 4 (3) 3 (4) 2 (5) 1 Low

61. After a run with a fatality, I would like to (check all that apply)
(1) Be alone
(2) Talk to a counselor
(3) Do work around the station
(4) Talk to other men about it
(5) Go to sleep
(6) Do anything, except think about it
(7) None of the above

62. What color should fire engines be?
(1) lime green
(2) red
(3) white
(4) yellow
(5) other

63. The kitchen in a firehouse should be most like one in
(1) an apartment
(2) a house
(3) a small restaurant
(4) a school
(5) a large restaurant

64. The average person thinks of a firefighter having status equal to or higher than which of the following? (check all that apply)
(1) Professional Football Player
(2) Mayor
(3) Policeman
(4) Construction Worker
(5) Lawyer
(6) Car Salesman
(7) Garbage Collector
(8) Repairman
(9) College Student
(10) Other
65. The wall materials in the sleeping area of a firehouse should be . . . (check all that apply)
   (1) Painted Block
   (2) Brick
   (3) Painted Drywall
   (4) Paneling
   (5) Vinyl Wall Paper
   (6) Glazed Tile
   (7) Other

66. The interior walls of the day room should be . . . (check all that apply, cost is not a factor)
   (1) Painted Block
   (2) Brick
   (3) Painted Drywall
   (4) Paneling
   (5) Vinyl Wall Paper
   (6) Glazed Tile
   (7) Other

67. The exterior of a firehouse should be made of . . . (check all that apply, cost is not a factor)
   (1) Aluminum Siding
   (2) Glazed Tile
   (3) Painted Block
   (4) Steel Siding
   (5) Brick
   (6) Concrete Panels
   (7) Wood Siding
   (8) Other

68. The outside appearance of a fire station should be most like which of the following? (check all that apply)
   (1) Warehouse
   (2) Bank
   (3) Church
   (4) Garage
   (5) Public Building
   (6) Library
   (7) Office building
   (8) Government building
   (9) House
   (10) Other
69. The atmosphere inside a firehouse should be most like which of the following (check all that apply).

1. Office
2. Garage
3. Church
4. Courtroom
5. Fraternal Organization

(6) Factory
(7) Exclusive Club
(8) Home
(9) Hotel
(10) Other

70. Which of the following are appropriate features you would like to see in your dream firehouse. (Check all that apply).

1. Lots of Windows
2. Skylights
3. Racquetball Facility
4. Basketball Court
5. Fireplace
6. Fire Slide Pole
7. Hose Drying Tower
8. Hose Drying Machine
9. Bowling Alley
10. Video Games
11. T.V.
12. T.V. (2 or more)
13. Outdoor Patio
14. Storage room for turnout gear
15. Quiet Room
16. Vending Machines
17. Weight Room
18. Private Bedrooms
19. Separate Sleeping Area For Females
20. Group Shower Area
21. Individual Showers
22. Dishwasher
23. Carpet
24. Tile
25. Drive Through Bays
26. Wood Lockers
27. Metal Lockers
28. Back In Bays
29. Fenced Parking Area
30. Other
Please answer the questions in the space provided.

What would you like in the way of an exercise program?
(type of room, equipment, etc.)

What would you like in the way of a day room (recreation area)?
(type of room, pool table, etc.)

What type of firefighting training would you like to have knowledge of or more indepth training in?
(Hazard Materials, repelling, etc.)

What could be done to improve the public image of the firefighting profession?
(Mock disasters, sell smoke detectors, etc.)

For a volunteer department, what incentives are needed to stay in service at all times?
(Do more than just sit around, etc.)

What could be done to encourage new members to join a volunteer department?
(Have a clean firehouse, have a friendly atmosphere, etc.)

What needs to be done to raise the morale in this department?
(Building inspections, competitive tournaments, etc.)
Many times the ideas you have are very useful to an architect, no matter how simple the drawings are. With the existing site given, for a 2 bay, 6 personnel station, draw your “dream” firehouse as you would like to have it. Remember cost is not an issue.
Information can also be gained for fire station designs by having you write down your activities and thoughts in a fire station you are not familiar with.

1. If you worked at this firehouse, imagine standing at the numbered locations. Write down what you are doing and your thoughts on the corresponding line to the right.

2. Make any changes to the firehouse as you desire.
The American Firehouse by Rebecca Zurier,

Chief Richard Lamb, Wayne Township Volunteer
Fire Department, Indianapolis, Indiana.

Dr. Bruce Meyer, College of Architecture and
Planning, Ball State University, Muncie,
Indiana.

Captain Bill Schrader, Muncie Fire Department,
Muncie, Indiana.

The men and women firefighters who participated
in my study from Castleton, Pike, Speedway,
Washington, and Wayne Township Fire Departments.
Thesis Proposal

An Aid to Design: Application and Use of Client Participation Strategies in the Architectural Profession

Architectural Thesis Proposal

by

J. David Cook

December 13, 1984

My career goals pertain to the construction side of architecture. Although this goal may seem a bit different for a fifth year architectural student, my interest involves more than just being a construction manager, inspector, or even an on-site architect. This goal is combined with a strong interest in the areas of architect/client interaction, effects buildings can produce on people, and fire safety of buildings. During the next nine months, I expect to gain a very firm base of knowledge on each one of these interests. My aspirations in a studio belong with the basic components of working very hard, and having a professor who sees my potential and demands no less than that potential of me. As an architectural student with diversified interests in the profession, so are my pertinent experiences. As a summer job I was employed by a consulting engineering firm as a construction inspector. This opportunity to work in the field with experienced inspectors gave me a great understanding of the construction profession and a deep desire to pursue a career in a related field. I have also served six months as a volunteer fireman to understand, from a different point of view, how architects can produce safer buildings in which people live and work.

As a fireman, I experienced the need for an environment that keeps its occupants interested during the time between emergency runs. This idle time can cause morale problems as well as other problems within a fire station. The solution to the problems of a fire station environment lies in the men who work in them. The problem is that too many times architects do not involve the client in the design process enough in order to provide an environment that is desirable for the occupant's point of view. This problem is mentioned in the book American Firehouse by Rebecca Zurler. "If the architect had spent any time in a firehouse, he would have known better. If he'd asked us, we could have told him a thing or two." The strategies architects use to involve their clients are vital to the success or failure of a project. Some of these strategies may include meetings (individual, public, and user groups), seminars/workshops, post occupancy surveys, interviews, client comments, design project analysis/discussion, cognitive design ideas, building analysis, and questionnaires.

I believe that client participation strategies are a vital part of the design process in order to solve client problems and generate design ideas. Thesis Statement: If client participation strategies are a vital design tool, then by using a variety of these strategies,
design solutions to the problem of a modern firehouse will be established. The questions to be addressed are: Can client participation strategies provide reliable information to design with? Do these methods provide the client an appropriate way to express their opinions in the design process? Of the methods used and developed, which ones are the most effective (least effective) in the attempt to involve clients in the design process? The expected outcome of this thesis for me will be a stronger understanding of how client participation strategies can aid the architectural profession. This thesis project will also provide me with an excellent experience in an architect/client relationship. The expected outcome of the project itself is hard to predict because I am working with an inconsistent variable, people. I do expect client participation strategies to be very useful in determining various design criteria, and the client to become more interested in the design process and the end product of the design.

The project I propose to test my thesis on is a new fire station for Wayne Township Volunteer Fire Department. The Department has a problem with keeping volunteers interested in their work, fulfilling commitments, having a high morale and, like all fire departments, a public image problem. Although I will design an administration headquarters and a nationally used training facility, the thrust of my thesis is to design, with the aid of client participation strategies, a fire station and supplementary activities that will assist any fire department in defeating or reducing the degree of severity of these problems. The process I plan to go through is to analyze and refine existing strategies and develop new ones by gathering data from Wayne Township and other departments, both volunteer and paid. After the information from these strategies have been analyzed, I will use this data to design a fire station that meets the needs of the clients. As my design process continues toward the final project, I will ask for input from the clients. This input will then be designed back into the project. This process will involve having the men analyze and comment on the preliminary designs I have developed.

The site is located on the west side of Indianapolis in Marion County. The actual site is the present location of Wayne Township training academy and administration buildings. The reasons for choosing this site is because there is already an established training tower, support facilities, and land that is owned by the Department.

It will be hard to know how reliable these strategies will be in problem solving because of the use of people as a source of information. But I feel that I will know that my thesis and problem statement have been well tested if and when the design of a building can give the client a satisfactory environment in which to live and work. This can be done by eliminating unwanted problems that arise because of an undesirable environment.

I must rely on the Wayne Township's Chief and captains to supply me with criterion to test my final project for its potential increase in the interest in staying and working at the station, the keeping of commitments made to the Department, increase in morale and an increase in public image.

Since my project will rely heavily on the opinions and attitudes of people, the success and/or failure of a project of this focus may not rely on the architect, but upon the people who use the facility and society as a whole.
For question 1-3 circle the answer that best applies.

1. I am a member of (1) Castleton (2) Indianapolis (3) Pike (4) Speedway (5) Washington (6) Wayne (7) Other

2. I consider myself a (1) Firefighter (2) Fireman (3) Fireperson (4) Firewoman (5) Other

3. I consider the place I am in a (1) Firehouse (2) Fire station (3) Fire hall (4) Other

For questions 4-53 please circle the response you feel best applies to your attitude about the statement. Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), Strongly Disagree (SD).

4. The image of firefighters is good in the eye of the public.

5. Firefighters get the respect they deserve.

6. An annual public invited mock disaster training drill is a good idea for both my training and the public image of the Department.

7. The image of the firefighter would be improved if they spent more time in the community while on duty. (example: building inspections, giving out emergency phone number stickers, selling smoke detector, etc.)

8. Firefighters should be seen by the public while on duty more than just for emergencies.

9. To see firefighters living and working within a firehouse will improve the image of firefighters.

10. Firehouses should be a visual focal point of the community.

11. After a fatality run, I could use help dealing with the situation.

12. The men and women at a firehouse could be compared to a fraternal or social organization, etc.

13. A Firehouse should have an inviting appearance to the public.

14. A map of our district mounted in a visual area (apparatus room, etc.) would be a great asset.

15. Theft is a problem at our station.

16. Vandalism is a problem at our station.

17. The doors should be locked during the day to our firehouse with only supervised admittance. (Keys, code system, etc.)

18. Each man should have an individual area to sleep in, versus a group sleeping area.

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25. An exercise program should be a part of every firefighter's duty.

26. A microwave would increase the group use of the kitchen.

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29. Smokers at my firehouse bother me while I am on duty.

30. There should be a separate space for smokers in my firehouse.

31. A firehouse should be a social environment, at least in part.

32. More privacy is needed at our firehouse.

33. Firefighters should have a say in the design of their firehouse.
34. After a fatality run, I deal with the situation on my own about the same as everyone else. SA A U D SD
35. A firehouse should not be recognized for what it is, but should blend with other buildings around it. SA A U D SD
36. Visitors of on duty firefighters should be encouraged at our station. SA A U D SD
37. While on duty, everyone should have a similar dress uniform. (example: same shirts or hats or pants, etc.) SA A U D SD
38. All men of a fire department should have the same style and color of turn-out gear (excluding captain's & chief's helmets). SA A U D SD
39. Whether or not a firehouse is interesting to live and work in is a result of the building itself. SA A U D SD
40. Life in a firehouse is interesting based more on the activities than the building itself. SA A U D SD
41. I feel a close association with the other men and women on my shift. SA A U D SD
42. I have a good understanding of today's building materials and their uses and hazards. SA A U D SD
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45. In a volunteer department, turn out gear should be kept at the station. SA A U D SD
46. Every shift should have certain cleaning duties assigned. SA A U D SD
47. Instructed training during on-duty hours should be a regular occurrence. SA A U D SD
48. A TV area should be separate from the rest of the day room. SA A U D SD
49. I should be encouraged to exercise while on duty in order to prepare myself for any emergency. SA A U D SD
50. The kitchen in our firehouse is not used as much as it should be. SA A U D SD

51. A voluntary exercise program should be a part of every shifts' activities. SA A U D SD
52. Athletic tournaments with other departments are a good idea for morale. SA A U D SD
53. Between runs, time should be spent doing activities to help my firefighting skills and improving the public image of firefighters and not just watching TV. SA A U D SD

For questions 54-70 please circle the number to the response that you feel best applies to your attitude about the statement. Or give your response on the line provided next to "other".

54. The TV shows watched at our firehouse should be selected by
   (1) First come, first serve basis
   (2) Majority vote
   (3) Sign up ahead of time
   (4) "Drawing out of a hat"
   (5) By some other method

55. A firehouse should be cleaned once...
   (1) a shift
   (2) a day
   (3) every two days
   (4) a week
   (5) less frequent than once a week.

56. While on or off duty I exercise to help build my firefighting stamina
   (1) Regularly
   (2) Frequently
   (3) Occasionally
   (4) Rarely
   (5) None of the time

57. How many people should sleep in a given bunk room/bedroom?
   (1) 4 (2) 5 (3) 6 (4) 7 (5) 8 or more

58. I would like to see the chief at our station...
   (1) Regularly
   (2) Frequently
   (3) Occasionally
   (4) Rarely
   (5) None of the time
59. Relative to other professions, firefighters' status should be ranked
(1) 5 high (2) 4 (3) 3 (4) 2 (5) 1 Low

60. Relative to other professions, firefighters' status are actually ranked
(1) 5 High (2) 4 (3) 3 (4) 2 (5) 1 Low

61. After a run with a fatality, I would like to (check all that apply)
(1) Be alone
(2) Talk to a counselor
(3) Do work around the station
(4) Talk to other men about it
(5) Go to sleep
(6) Do anything, except think about it
(7) None of the above

62. What color should fire engines be?
(1) Lime green
(2) Red
(3) White
(4) Yellow
(5) Other

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(5) Lawyer
(6) Car Salesman
(7) Garbage Collector
(8) Repairman
(9) College Student
(10) Other

65. The wall materials in the sleeping area of a firehouse should be ...
(check all that apply)
(1) Painted Block
(2) Brick
(3) Painted Drywall
(4) Paneling
(5) Vinyl Wall Paper
(6) Glazed Tile
(7) Other

66. The interior walls of the day room should be ... (check all that apply)
(1) Painted Block
(2) Brick
(3) Painted Drywall
(4) Paneling
(5) Vinyl Wall Paper
(6) Glazed Tile
(7) Other

67. The exterior of a firehouse should be made of ... (check all that apply)
(1) Aluminum Siding
(2) Glassed Tile
(3) Painted Block
(4) Steel Siding
(5) Brick
(6) Concrete Panels
(7) Wood Siding
(8) Other

68. The outside appearance of a fire station should be most like which of the following? (check all that apply)
(1) Warehouse
(2) Bank
(3) Church
(4) Garage
(5) Public Building
(6) Library
(7) Office building
(8) Government building
(9) House
(10) Other
69. The atmosphere inside a firehouse should be most like which of the following (check all that apply).

- Factory
- Exclusive Club
- Home
- Hotel
- Fraternal Organization

Please answer the questions in the space provided.

What would you like in the way of an exercise program? (type of room, equipment, etc.)

What would you like in the way of a day room (recreation area)? (type of room, pool table, etc.)

What type of firefighting training would you like to have knowledge of or more indepth training in? (Hazard Materials, repelling, etc.)

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1. If you worked at this firehouse, imagine standing at the numbered locations. Write down what you are doing and your thoughts on the corresponding line to the right.

2. Make any changes to the firehouse as you desire.