ARCHITECTURAL INTERNSHIP 101
A Guide For Success

By

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I would like to thank the **University of Hawaii's School of Architecture** for allowing me to focus on contributing to the development of our intern architects and young architectural professionals. It isn't often that an individual well into his career has an opportunity to provide meaningful assistance to developing professionals.

I would like to express my very special thanks to former **Dean Raymond Yeh, FAIA**. His initiative to create the country's first architectural doctorate program has allowed our architectural education to parallel doctorate degrees in other professions. Thank you very much for allowing me to be a part of your first doctorate class and for expanding the university's program to reach out throughout the Pacific Basin. I have met so many great people from so many interesting countries.

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1 INTRODUCTION

1.1 MANUAL PURPOSE

The purpose of this (manual) is to assist intern architects who have little or no office experience seek employment and transition smoothly into the workplace. In retrospect of his own experiences and through continuing observations, the writer has recognized that a general information manual will be a valuable tool for the recent architectural graduate. This manual addresses topics pertaining to job procurement; roles and office activities; job responsibilities; and discussions pertaining to plan reading and development of architectural contract drawings.

This manual also prepares the recent architectural graduate to develop professionally by addressing the needs of the intern architect at various stages of development. The first part of the manual provides useful information at the entry level. The next pertains to functioning and accomplishing tasks within the architectural office. The latter portion of this manual provides information relative to becoming a seasoned or experienced intern architect. Upon reading and comprehending the information, the intern architect should be well prepared to undertake responsibilities upon entering the architectural office.

1.2 THE EXPERIENCE FACTOR

The intern architect needs to realize that becoming an architect is a lengthy process and requires a strong personal commitment to the architectural profession. The minimum duration of time for internship requires fifty-six hundred hours of experience. Relative to two thousand and twenty working hours per year, this translates to approximately two years nine months and one week. This would be the minimum time required to qualify for architectural examination. This internship period may be even longer if all requirements of the National Council of Architectural Registration Board's Intern Development Program requirements are not satisfied.

Preparing for the examinations based upon what was learned in the architectural curriculum and what should be learned in the workplace becomes an arduous task. Studying for the examinations requires discipline. The intern architect must allocate time for studying while maintaining a full-time architectural position.

The architectural experience will have barely begun even upon passing the examinations to become a registered architect. There is much to be learned in order to become an established and respected architect. Personal goals and directions will have to be assessed. All notable experiences from school and from work should be filed away for future reference. Individual life experiences will be a factor that distinguishes architects from one another.

I was fortunate to have had Jorn Utzon [1] in our design studio as a visiting professor in the early seventies. He shared his design theory and his inspiration for the Sidney Opera House with us. His vision was of a sectioned orange unfolding to create his masterpiece. It was not the sails that had always been my guess. His talent for uncovering and recognizing designs within natural forms and his fondness for repetitive natural patterns gave inspiration for concepts for future design projects.

In 1973, I observed a fascinating demonstration by Nicholas Negroponte[2] at MIT. He was experimenting with applications of a computer-aided design. He displayed buildings set on contours, rotating the forms to expose the other facets of the structure and terrain. At the time, I didn't realize that I was watching the beginnings of computer technology as it would revolutionize the architectural practice in twenty years. That memorable experience has enabled me to be receptive to new ideas and to recognize that anything is possible.

The intern architect should make an effort to research architectural firms prior to submitting letters of interest. It is important to seek employment in firms that will allow the individual to learn and grow as a professional. It is always desirable to apply at firms that have established reputations.

In 1977 I had decided to seek an architectural position in Los Angeles. As years passed, I realized how fortunate I was to have been hired by Gruen Associates. When looking for a position, I was occupied with the names of firms merely to determine whether they were small or large or in what part of town they were located. I had no idea of who Victor Gruen [3] was, nor was I familiar with the firm's portfolio. I was unaware that he had been credited with developing the concept of the shopping center.

Soon after being hired, I began to take note of the design projects displayed throughout the office: the US. Embassy in Tokyo, the San Bernadino City Hall, Fox Hills Mall, the Del Amo Shopping Center. At that time, the partners at the Los Angeles office were, Hermann Guttman, Edgardo Contini, Bill Dahl, Ki Suh Park, and Allen Rubenstein. Other offices were located in New York and Washington, D.C. The office was multi-disciplined and included engineering (civil, structural, mechanical, electrical), planning (including traffic engineering), interior design, graphics, and a computer department.

The architectural operation included design, production, and construction departments. The firm also had marketing, accounting, and reproduction departments. For someone new, the size of the operation was immense. I was later informed that the firm had been downsized and was previously even larger. This was an overwhelming statement to someone who was already impressed.

A firm of such professional stature had so much to offer. I enjoyed interaction with Rudy Baumfeld during that period in the late seventies. Mr. Baumfeld demanded no less than perfection for his projects. I was simply in awe of the dynamic presence he commanded through his fiery demands for attention to

design details and his quest to attain perfection for his designs. An elderly, refined gentleman, Rudy was an associate and fellow Austrian of Victor Gruen.

Cesar Pelli [4] also cast an imposing, distinguished figure striding through our offices. Cesar had previously been the principal design partner at Gruen from 1968 to 1976 and would visit our Los Angeles offices on occasion. He had gone on to establish his own office as well as to assume the position of dean of Yale's architecture school.

The intern architect should realize that learning should be a complete experience. Every moment should be absorbed to develop an understanding of this profession. Attention to one's surroundings and to details is very important. Seemingly negative situations should be converted into a positive experience. Even the smallest of experiences will have a permanent impact on the intern architect. It becomes a greater experience when others have taken an interest in the development of the intern architect.

My technical mentor at Gruen was Tosh Makino. He was like a master craftsman as a job captain and architect. He unselfishly taught me as much as I cared to learn and was always there to lend a hand. Mike Enomoto would also prove to be a valuable peer mentor. A year older, but having been at Gruen for about five years, he provided me with much guidance and advice during that period.

My boss and friend, Norma Sklarek, [5] was a source of unending support. Norma, the firm's director of architecture, would go on to become the first lady practitioner to be recognized as a Fellow by the American Institute of Architects. She provided all the young people in the firm with the encouragement and genuine interest that was necessary to push everyone forward. In between her involvement with UCLA and the AIA, she would organize design classes during lunch and assign design exercises to prepare us for the state licensing exams.

I also had the good fortune to work with Kurt Franzen, who was one of the firm's vice-presidents. I was impressed that he was always in charge at meetings, studied the contract documents beforehand and always asked the right questions. I was surprised that he knew the documents as well as I did. Tosh and Norma have since retired, while Mike and Kurt have become partners at Gruen.

As intern architects and young registered architects develop within the profession, the need to secure advancements and promotions will become more evident. That need to establish future directions will challenge one's ability to function and to succeed within the profession. The need to measure that confidence developed through years of learning and training may take place through a decision to assume more responsibilities or to establish one's own practice.

I returned to Honolulu from Los Angeles in 1979, to enter into a new architectural practice with my good friend and college classmate, David Shima. As novices, we quickly realized that there was so much for us to learn. We assumed the duties of draftsmen, designers, estimators, detailers, salesmen, administrators and whatever roles we needed to fulfill in order to succeed. We experimented with numerous ways to be more productive and attempted different methods to get our jobs out on time. For a short period, we even tried starting in the early mornings, like the old sugar plantations, only to find that we would be less productive and extremely exhausted by early evening. We experimented and learned.

David was a very talented and dedicated designer. If anything, I learned from David about being completely involved with each project as it was designed and developed. He taught me that you have to experience everything. He designed with such a passion and explained his designs with much emotion and excitement.

There is a need for intern architects and architects to develop in many ways. Despite great technological advancements and the continuing improvements in education and training, development of human qualities in dealing with multiple perspectives of diverse interest groups must be stressed. Future professionals should be reminded that the right attitude is indeed important and that sensitivity and empathy are necessary traits. An empathetic capacity to comprehend the issues, concerns, values, and perspectives of others must be nurtured in the practice of architecture.

After years of practice, I have noted that architecture should also be person-oriented. This means that we should also take our clients' interests and our projects' interests to heart. If you are able to admit to acting responsibly and professionally, and personally, then you may be able to say that you did a good job.

On several occasions, I had the good fortune to attend several presentations by Mr. Ki Suh Park of Gruen Associates. Mr. Park had emphasized the need for "empathy". He described this ability as "the wearing of many hats". He went on to point out that we should be aware of the perspectives and values of others and that we need to understand their viewpoints and needs.

If intern architects are able to grasp these ideas, I believe that this understanding will result in exceptional performances.

2 SEEKING EMPLOYMENT

2.1 CHAPTER PURPOSE

Upon graduation with an accredited professional degree, the architectural student assumes a new role as an intern architect. This promotion occurs after years of diligent studying and dedication to a demanding professional curriculum. Chapter 2, Seeking Employment, deals with some suggestions for obtaining a position in an architectural firm.

Note: All figures described or referenced are located at the end of the chapter.

2.2 SETTING GOALS

Before setting out to look for a position, time should be taken to set professional and personal goals. A plan should be formulated to determine specific activities and certain milestones.

Many intern architects are determined to obtain their architect's license as soon as possible. In doing so, one needs to set the wheels in motion. Many jurisdictions require that all new applicants submit their qualifications according to the National Council of Architectural Registration Boards (NCARB) Intern Development Program (IDP) [6]. In meeting these requirements, the intern architect should request the proper NCARB forms and information. If enrolled within six months of graduation, the charge is $100 rather than $350 beyond the six-month period. There is an annual fee of $75. This is for maintaining a documented IDP record until you become registered.

Licensing information may be obtained in several ways. Local chapters of the American Institute of Architects [7] will provide information packets pertaining to the IDP requirements and enrollment in the program. Joining the AIA as an associate member will allow the intern architect to be active in the profession as well as be kept informed of social and professional activities. There are many other benefits available though this organization. The AIA will be of great assistance throughout the course of one's professional career. The AIA may be contacted at:

The American Institute of Architects
1735 New York Avenue, NW
Washington, DC 20006
Phone No. (202) 626-7300
http://www.aiaonline.org

Additional information may be obtained from the NCARB office at:

Student and Intern Services Department
NCARB
1735 New York Avenue, NW Suite 700
Washington, DC 20006
Phone No. (202) 783-6500
http://www.ncarb.org

The National Council of Architectural Registration Boards (NCARB) is the organization that sets licensing standards for the various jurisdictions. It also maintains individual records for intern architects and licensed architects. The NCARB transmits those files to member states and jurisdictions in order to determine the qualifications of individuals wishing professional registrations in those areas. The NCARB provides applicants with information regarding requirements and detailed instructions on procedures.

Joining the NCARB early allows for accurate record keeping throughout the intern architect's career. It will maintain and accumulate all records pertaining to an individual's education, training, and professional experience. It should be noted that when architects delay in applying for NCARB certification, they could encounter difficulties in verifying their previous professional experiences. Some employers or supervisors may be difficult to locate or may have passed away. The NCARB is very detailed and requires accurate reporting of information. To benefit most from the IDP, the intern architect should start participation at the beginning of the first acceptable employment opportunity. Enrollment may occur after completion of the third year from a NAAB-accredited program.

Upon graduation or even earlier, the intern architect should also request information from his or her state or jurisdiction's professional licensing agency. Advance information regarding qualifications for architectural registration can ease the path to licensure.

It is recommended that, whenever possible, the intern architect should personally request information. This allows for better familiarity with the system as well as becoming familiar with the personnel connected with the various organizations. One should strive to conduct business in person whenever possible. This effort provides a very strong image of an individual who is serious about his or her business and in developing relationships. Friendships developed with staff can provide much needed support as well as encouragement.

Some intern architects are not as concerned about obtaining registration as they are about developing work experience or continuing on to strengthen their formal education. Not everyone has the same aspirations or goals. Some might want to specialize primarily in design and seek employment at prestigious design firms. Many might choose to seek alternative experiences, such as with a construction

company. Some may desire to travel and broaden their horizons. Others pursue continuing education in business, planning, graphics, computers, etc. Some develop a specialty in a specific area of the profession. Some may decide that architecture is not for them and choose some other profession where their architectural training is of great help to them. In any event, each intern architect should take some time to deliberate the future and plan ahead.

Personal goals should also be evaluated at the early stages of the intern architect's career. This consideration will help shape the direction of a person's career. Intern architects may wish to travel, be associated with a certain prominent firm, become a principal or partner, or establish a practice. These things will influence the way in which careers are pursued. The desire to own a home, a nice car, or other material things may influence the manner in which decisions are formulated. Many intern architects leave for other locales to reach personal goals. Some seek a better lifestyle where the economy is stronger, more opportunities are available, and the cost of living is more manageable.

2.3 RESEARCHING FIRMS

The intern architect should research targeted firms prior to applying and interviewing for a position. It helps if one is familiar with the firm or admires the work it has been doing. This information will strengthen the intern architect's ability to be specific about the reason for selecting the firm. He or she will receive an enormous amount of gratification and confidence if employment is gained at the firm considered to be a top choice.

The intern architect might want to discuss the selection of potential firms with instructors at their respective schools of architecture. Faculty members have a great deal of knowledge about many firms and can introduce students to professionals who may have intern architect positions available. Many schools maintain a professional practice committee. They usually maintain a wealth of information regarding architectural firms and should be able to provide assistance in pursuing employment. Career services offices at the university can also provide assistance. The Internet is another means to research firms. Many offices have established web pages that provide a good look at their operations, projects, organization, etc. Some even include information pertaining to intern architects and how to go about applying for positions with their firm. Descriptions of intern architect positions can also be obtained at local AIA offices.

Working in a good environment always helps in maintaining a positive outlook while establishing good, solid experiences as an intern architect. Firms of varying sizes will provide the intern architect with an opportunity to learn as well as provide a challenge for advancement. It is important to decide what type of firm and environment are best suited for the individual. Firms of differing sizes have their benefits as well as disadvantages. All firms also have different plans available regarding benefits, incentives and bonuses, and retirement.

Understanding the workings of small, medium, and large firms may influence decisions regarding employment selections.

2.31 Small Firms

Employment with a small firm allows the intern architect to develop more hands-on experience within a more intimate setting. It allows for a closer interaction with the firm's principal and other firm members. Certain smaller firms also develop specialized areas of practice. This specialization can provide the intern architect with development opportunities within a specialized area. The multifaceted project exposure at smaller firms can also build a good foundation for the intern architect's personal development. Such exposure allows the intern architect to gain a comprehensive view of the entire firm versus only a small part of a large organization.

In general, the projects undertaken by these firms are usually smaller and more varied, with shorter due dates and smaller fees. These firms need to maintain a fast pace to complete projects and receive payments to meet payroll and expenses. Compensation packages may vary from firm to firm. Small firms normally do not offer very much in benefits compared to larger firms. The firms will, however, take care of their employees in their own ways, regardless of size. The success and profitability of the firm are highly dependent upon the performance of the employees. The profitability of a firm will normally determine how its employees will be compensated. Within smaller firms, employers are usually more aware of individual performances due to the amount of interaction that takes place among staff members. Job security in any firm requires employees to perform so that the firm can remain in existence.

A small architectural firm provided me with a more intimate training environment and exposure to the entire operation. During the summer of my third year of college, I worked for an architect who had just started out. He had two other people working for him. He had a lot of different project types ranging from custom homes to apartments to warehouses. The pace of work was extremely intense with a lot of work running into the night and weekends. I managed to learn much during that summer period.

I had great exposure just by being in an architect's office. I learned about running blueprints and the finer points of drafting. The assignments ranged from picking up red marks (changes), straight tracing, laying out base sheet drawings and detailing. I was able to look through catalogues and manuals of products and equipment to work out details. I was given samples of details and drawings to follow. I was able to meet many sales and manufacturers' representatives. Many became good friends and would assist me over the course of my career.

I also had other exposures to the workings of the small firm. Once for a month, I was placed on loan (from a large company) to a firm in West Los Angeles where there were two principals, three administrative personnel and two draftspersons. The managing principal was originally from England and very intent on meeting all deadlines. He was very aggressive and undertook many different projects types. We worked on custom homes, planning projects, retail shops, and office interiors. The workday seemed long and busy, yet the skills I obtained just by "doing" were invaluable. I spent about 14 hours per day (including Saturdays) drafting, detailing, and designing. The extra hours spent working with the principal architect enabled me to gain additional perspectives of the profession through interactions with him.

2.32 Mid-size Firms

Mid-size firms tend to have a wider range of project types than smaller firms. These firms undertake much of the same project types as the small firms yet still compete with most of the large firms. To survive, the mid-size firms must be progressive when conducting business. Since the mid-size firms do not have as many resources as the large firms do, they must carefully allocate resources to maintain a smooth operation, especially in the area of purchasing new and effective equipment.

Most mid-size firms have established office policies, production, and quality control standards and manuals. Standards and manuals provide a degree of compliance and uniformity as well as prepare the firm to grow in size. They ensure that anyone entering the firm will be in strict accordance with all the procedures required by the firm. The experience provides for a well-rounded development. The intern architects move up in the organization according to their willingness to apply themselves and learn by doing.

My current firm is a mid-size firm. Our personnel must assume multiple roles and perform services at a rather quick pace. After a short period of orientation and training, our intern architects get involved in the coordination of their own projects. They become the point of contact for a project and are assigned to an architect or a project manager. The intern architect serves as the hub of the project's activities. The scheduling of meetings, record keeping, and coordination of all activities are through this person. This role is our later version of the former "clerk-of-the works" position. It provides an opportunity for young neophyte professionals to gain invaluable exposure to the many facets of architectural duties.

In a mid-size firm as ours, intern architects are usually evaluated on their capabilities. We attempt to determine each person's strengths and weaknesses. We want to employ the intern architect's strengths so that the

firm will at least have some billable efforts. We then train the individuals to learn whatever we feel might be lacking. Initially, the firm would not be able to profit from its beginners but that situation will quickly be remedied. We have been fortunate in having had many eager and capable intern architects as a part of our staff.

The first thing we stress is that intern architects are professionals. Their conduct, performance, and expectations must be moved up to a higher level. We expose our intern architects to many aspects of our practice. We are positioned between the small firms where more individual attention is possible and the large firms where there is more regimentation and competition among peers. We provide guidance yet expect our staff members to apply themselves in developing their skills.

Our intern architects are exposed to our firm's drafting procedures immediately. They are able to improve their skills through continuous practice and application. Other duties involve learning how to write memos and meeting minutes, as the development of project documentation is critical to our success. Other duties involve learning how to conduct fieldwork as well as research (data and graphic). We instruct our staff on where to go, whom to see, and what and how to accomplish things.

2.33 Large Firms

Large firms have a more regimented structure. Many also maintain additional branch offices at other locations. The large architectural firms are often broken up into departments. These generally include design, production, and construction departments. The designs are developed in one department then passed on to the production department to produce the contract documents for bidding and construction. The construction department generally conducts the bidding process as well as oversees the project through construction.

Project architects and/or project coordinators are assigned to oversee projects from start to finish. Besides having department heads, large firms are likely to be run by its partners or principals. Other supplemental departments such as administration, accounting, marketing, planning, interior design, graphics, traffic engineering and other in-house engineering disciplines may exist within the firm. The large firm can probably provide a wider range of advancement opportunities due to its diverse nature and also networking with its other office locations. Project sites located throughout the world also permit assignment to numerous locations and possible travel opportunities for the intern architect.

Greater advancement opportunities are normally available in larger firms. Competition in large firms provides a great challenge for the intern architect. After graduating from various architectural programs throughout the country and the world, many intern architects are eager to test their knowledge and education in the workplace. They are determined to establish their ranking and position within the firm. The intern architect will be challenged in every possible way, especially in comparison to performances of other intern architects: intelligence,

ability to carry out assignments, professionalism, appearance, maturity, being a team player, etc.

My personal experiences and observances while at Gruen Associates of Los Angeles played an important part in my development as an architect. Venturing away from home and experiencing the workings of a large, highly regarded, international firm provided me an opportunity to see that these firms have earned their reputations through years of hard work and efficient organization of their operations. At that time the firm was quite active with offices in New York and Washington D.C.

My first moments at the firm required reading manuals pertaining to office policies and architectural standards. Information given was clear and concise regarding these matters and was very helpful in answering any questions I might have had. My assignment was to the architectural production department. This was the part of the firm responsible for producing construction documents for all the firm's projects. Other architectural departments consisted of the design and construction departments. At first everything feels brand new and different but you somehow manage to adapt to your new surroundings. It's almost like that first day at a new school. You create alliances with those compatible to your needs and goals.

Training consisted of working under the direction of the job captains who coordinated production of all the firms' contract drawings efforts. Intern architects were referred to as architectural assistants. Our duties consisted of drafting and detailing. As we progressed, our individual assignments became more involved. We were given more challenging tasks that required more research and application of what we had learned previously. We worked on many different projects: shopping centers, hospitals, recreation facilities, office buildings, government facilities, parking structures, and even an entirely new city in Iran. The exposure to various projects enabled us to develop a broader vision of architecture. We also had occasions to be assigned to help at other departments: planning, graphics, traffic, interiors, marketing, etc.

I was fortunate to have learned from so many people while at Gruen. I believe that learning from my peers also provided me with technical and professional growth. There were many good role models within the company. The office environment inspired the young employees to seek advancement within the company. This was one way to measure your professional development. The possibilities were there for you: job captain, project coordinator, project architect, department head, vice president or partner.

Exposure to firms of different sizes and types of operation presents the intern architect with preferences as to where one wants to be in the future. There is so much to learn and so much offered at the small, mid-size, and large firms. They all provide an opportunity for the intern architect to advance into the profession.

2.34 Government and Public Sector

Another possibility besides considering firms of different sizes is the possibility of entering the government or public sector. Many opportunities are available at different government levels. The local, state, and federal levels of government provide opportunities for the intern architect. At the local or municipal level, there are many positions that could provide the experience of working under a licensed architect. A person may work with architects from a number of City and County departments including the departments of building, planning, parks and recreation, and housing.

Many state agencies retain architects on their staff. Universities and community colleges also employ architects on staff to ensure that the facilities are in order to serve the needs of the campuses. Many federal agencies including the Army, Navy, Air Force, Marines, Coast Guard, and the GSA (Government Services Administration) also provide many opportunities, incentives, and benefits similar to those of the larger architectural corporations. These government agencies provide better compensation and benefits than many private firms. Personnel who are able to retire early are sometimes fortunate in pursuing other interests or second careers within the private sector.

In general, there are alternatives to gaining architectural experiences from other than private architectural companies. It is also possible for the intern architect to gain acceptable experience in related fields. If work is done under the supervision of a licensed architect, such experience may be acceptable as experience applied toward qualifying for the licensing exam. This should be checked with the NCARB or with the registration board at the intern architect's locale. Other employers to consider are construction firms, engineering firms, developers and certain corporations.

2.4 PREPARATION

Primary tools for presenting one's capabilities include: letters of interest, a resume' and a brochure or portfolio of pertinent work. It is imperative that best efforts are applied in the preparation and execution of these items. Most employers can tell a great deal about the applicant just from viewing these items.

2.41 Letters of Interest

The contents and appearance of the letter of interest should make an initial positive statement about the individual's strengths or weaknesses. Letters of interest on a handsomely designed letterhead give a good impression about the applicant. Letters of interest should express the intern architect's ability in regard to artistic expression, sense of proportion, awareness of providing vital information, and familiarity with business letters. The letters of interest that are very successful in appearance imply that a lot of careful planning went into the letterhead design. Logos are sometimes a good touch. Care must be taken, however, to ensure that the design is attractive rather than tacky or overpowering.

The contents of the letter should be concise and clear as to one's desire to be considered for employment. It should be very carefully planned and should be very successful in communicating to a stranger whom one has never met. Maturity needs to be displayed through the careful selection of words. Grammar and spelling should be flawless. Time should be taken to proofread, review, and revise the letter of interest until completely certain that it will provide the best chance for employment. An example of a letter of interest has been presented for reference in Figure 2.1 at the end of this chapter.

2.42 Resume

The resume or biography gives an in-depth look at the applicant. The potential employer needs sufficient information to weigh the intern architect's qualifications and to get to know the intern architect better. The presentation format will tell a lot about the intern architect applying for a position with a desired firm. The selection process is partially dependent upon how the intern architects are able to present themselves. The intern architect will most likely compete with others who are equally qualified and have spent many hours preparing their resume.

There is certain information that should normally be provided. These include:

1. Vital Statistics pertaining to Place of Birth, Marital Status, Military Service, Locations where raised (brought up). This is done more to provide some basic background before proceeding on into other areas of interest. You may provide only the information you feel will help or which you feel appropriate.

2. Education information including degrees, dates, institutions, awards, honors, etc. Employers gauge the potential level of abilities relevant to the education and personal accomplishments.

3. Any previous work experience. List all work experience starting with the most recent. This will sometimes give an indication of how active some people have been and also may indicate the person's willingness to work. This information also provides an insight into what type of experiences the person already has. Working in a supermarket, hospital, or any type of work experience may perhaps relate to some project type the firm might be involved in or may undertake. The firm would know that you have some working knowledge pertaining to such operations.

4. Certain special talents or interests that one has should be included. Language, computer skills, photography, sports, etc. should also be included. Traveling or any special familiarity with any region, country, state or locale may be of interest to the intern architect's prospective employers. Certain information may provide the intern architect an opportunity to fit into the organization as well as possibly provide an advantage over other applicants. The intern

architect should provide additional information that is appropriate.

5. References should be provided. Letters from former employers, professors, or associates will provide support for your cause. The letters of recommendation or commendation will tell the reviewer that other people think highly of the intern architect's past performances and character. The intern architect might also choose to list the names of certain individuals as references. One should identify their titles or positions, organization, address, telephone and fax numbers and/or e-mail address. There should also be a brief description of their role or relationship to the intern architect: former employer, associate, former professor, advisor, etc.

   The intern architect should by all means contact these people personally to ask for permission to use them as references prior to listing them. They should also be informed of what is planned. Being prepared will surely enable them to respond immediately. Any hesitation on their part may indicate a lack of planning on the applicant's part. Be sure to select only the strongest supporters. One negative response will be extremely damaging to the intern architect's efforts. Call your references to inform them of your successful employment and/or to thank them.

The intern architect should really make a strong effort in the preparation of his or her resume. Treat it as something so important that everything will be lost unless an exceptional product is presented. The intern architect should always maintain this mindset, as it will provide the drive necessary to succeed in everything one wishes to pursue or accomplish. Acceptance into a prestigious firm will be very rewarding to the intern architect and to the intern architect's future.

2.43 Brochure

As part of most architectural school requirements, intern architects are asked to compile a comprehensive portfolio. This accumulation of architectural projects plays a very important role in getting that first meaningful intern architect position. Unless the intern architect is able to create a whole new brochure for presentation at interviews, the academic portfolio will probably be the only measure of one's abilities and talents that one will present at a job interview.

The intern architect may also strengthen his or her brochure by including other information pertaining to any other work experience. Be certain that other project information achieved at the intern architect's job does not detract from the strength of one's portfolio. Make sure that the work presented is indicative of one's personal efforts or that one's involvement is clearly represented. Be certain to identify the context in which one's work was produced (e.g. level of class, time duration, individual or team situation, etc.) If a team project, personal involvement should be clearly identified. Any misrepresentation could result in the applicant's withdrawal from employment, termination or sheer embarrassment.

As an employee, I witnessed people being hired based on work they represented as their own. But when asked, they were not able to perform similar tasks, as they had used another person's work or did not clearly state their involvement in the work they presented.

As an employer, I once selected an illustrator based on an impressive advertisement that had been placed in an ad in an AIA newsletter. After reviewing samples of his work, I retained him to do a rendering for a fairly substantial project. The illustration was to be used as the cover for the program marking the project's dedication and groundbreaking. I was horrified to see the results just prior to the event. He had misrepresented his former employer's work as his own. We ended up spending countless hours having to prepare the illustration ourselves.

An applicant who was interviewed for a position in my current firm presented drawings for a project that he said he had done all by himself. Embarrassingly, he was not aware that the project was one of ours and that he was showing me our own work.

The portfolio tells the employer a lot about the intern architect's abilities and development. The employer not only looks at the quality of the work, but also at the sequence of development and the organization and written descriptions of the studio projects. The employer also tends to analyze the improvements made by the intern architect relative to advancing on to each subsequent design studio. Another consideration is a review of the effort made in the composition and arrangement of the portfolio. In the absence of a personal interview, the portfolio must stand on its own merit and be self-explanatory. Its organization is an indication of how the intern architect will perform in the workplace.

2.5 JOB APPLICATION

Success in obtaining a good position has a lot to do with how much effort one is willing to give in the pursuit of that intern architect position. The laws of supply and demand come into play depending on the economy and the job market relative to architecture. If all the firms are very busy, it should be very easy to obtain a job. It becomes a seller's market where one would be able to easily sell one's skills to an eager employer. In a depressed economy, the job market reverses and the employers are only looking to hire exceptional personnel. The pursuit for those few intern architect positions would then turn into a fierce competition.

The intern architect should develop a prioritized list of architectural firms and a schedule of when he/she will apply to those firms. It is more exciting and adds to one's personal experience if one desires to work at certain firms and is eager to pursue that goal. Whenever possible, the intern architect should try to hand deliver letters of interest and resumes. The intern architect should always carry his or her portfolio of work when making a personal delivery. The advantages are:

1. There is a possibility to at least see the lobby areas of the offices. If fortunate, someone may offer to give a tour of the entire office.

2. There is an occasion to meet the receptionist and other personnel who may be of great assistance. They may even be able to arrange an interview immediately. The applicant may also make some impact on office personnel who may have a say in the hiring process.

3. The intern architect has that initial moment to be visible as a professional. As an intern architect, one is no longer a student. There is a need to expand one's circle of acquaintances. During office visits, the intern architect will probably meet people whom he or she will see at various architectural functions for many years. It will always be nice to see familiar faces.

The intern architect should rehearse what will be said even when delivering letters of interest. Certain firms are very informal and warm while others may be very formal and somewhat institutional. The intern architect should always be well dressed. Remember that the first impression always will provide the biggest impact. One might consider following through with a phone call to inquire if the packet was received or whether the submittal was sufficient.

2.6 INTERVIEWING

The final obstacle in obtaining that coveted intern architect position is passing the interview with flying colors. Since the employer will weigh the qualifications of each applicant, one should consider the following:

1. Be on time. In fact, one should make it a point to arrive early to give one sufficient time to gather and prepare. The intern architect should never look as though he or she had to rush there. If one cannot be on time for that important interview, chances are that the employers will feel that he or she might always be late to work or for meetings and project deadlines.

2. Be well dressed and neat in appearance. Even if the office might appear to be informal, there are instances when office members have to dress-up on certain occasions. The interviewer will know, at least, that the intern architect is cognizant of his or her appearance and has professional standards. He or she should always make it a point to dress well.

3. Employers are mindful of the person's attitude during the interview. Courtesy is always a strong concern. Employers need to be assured that the intern architect has the right attitude and disposition. They are always looking for people who will fit in with the rest of the office staff. One rotten apple can spoil the whole office atmosphere. Employers are always conscious of this possibility.

4. Employers are aware that many intern architects usually have little work experience. Considerations and allowances are made regarding a person's eagerness and willingness to learn.

5. Employers are looking for team players: those individuals that seem as though they would want to make a difference and contribute to making the firm a stronger and better one. Company goals are not merely to survive but to also become better.

6. Make it a point to ask questions. Be knowledgeable about the company and what will be expected. This indicates to the employer that one is serious about being selected and employed. Questions regarding office hours, compensation, benefits, advancement, etc. should be raised if not presented.

What should the intern architect do if, at the end of the interview, he or she was offered the position? This is a real possibility. One should be prepared to discuss compensation as well as when one will be available to start.

2.7 FOLLOW-UP

After the interview process, a follow-up to the interviews is essential. The intern architect should maintain a record pertaining to the dates of application, interview, notification dates agreed upon, etc. The intern architect should follow through to inquire whether additional information might be helpful in expediting his or her selection or if there might be any questions to be answered. Displaying an eagerness to be selected might also be helpful to express seriousness in seeking that position. Every firm has its procedures. Sometimes decisions are delayed to allow for further applications. The applicant should inquire whether there was anything else that needed to be done.

If not selected, the intern architect should still express an interest to be considered should additional employment opportunities with the firm become available. One might inquire whether one's employment packet might be left on file with the firm. It is always a good idea to check back with the firm and remain in touch, especially if it is a firm with which one really wants to be associated.

In seeking employment in Los Angeles, I was fortunate to have been granted an interview with Gruen Associates' director of architecture. When she asked where else I had applied, I pulled out two sheets of paper from my pocket. On it I had a list of firms, names, and dates that I had made to help in finding an architectural position. I had check marks and handwritten notes all over it referring to return dates, reasons for not being hired, times and dates when I was supposed to call back or return, and with whom I needed to follow-up. I had gone to see some thirty firms in the L.A. area because jobs were very scarce during that time.

Although I had never asked her, I believe that my perseverance and sincere effort may have made a difference. I had a message when I got home

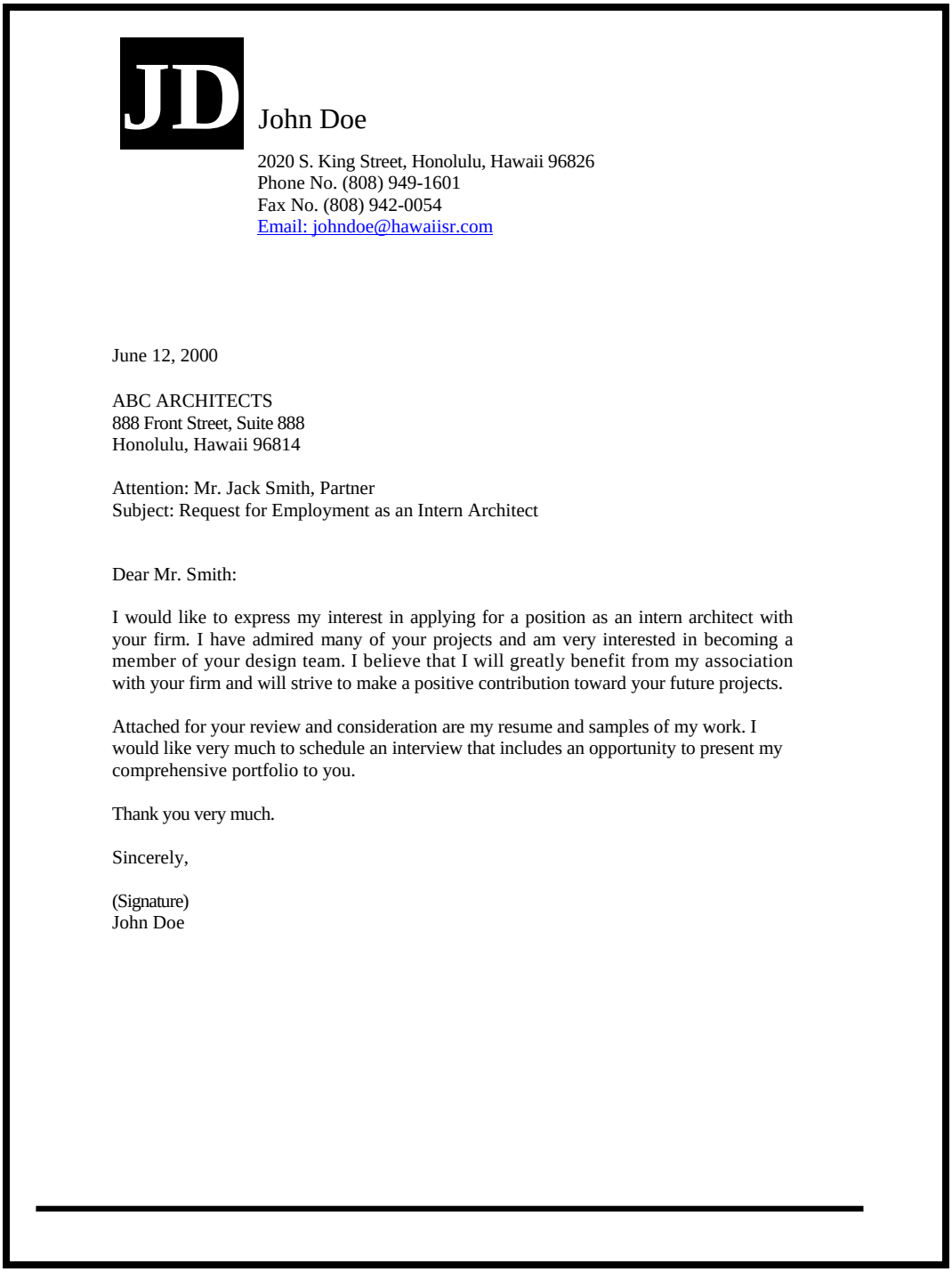
that evening that they had offered me a position. I believe that my experience in looking for work, although extremely exhausting, was a very positive one. I really enjoyed working at Gruen Associates and I hope that you will all appreciate and enjoy your work experiences as I did.

The intern architect should strategize a time frame and various scenarios regarding how long to wait for preferred firms and what should be done if an offer from another firm is received in the meantime. The intern architect should be prepared by listing the benefits and shortcomings of all firms contacted and prioritize preferences accordingly. He or she should prepare a script or outline of how to approach the preferred firm or firms if an offer has been made by a less preferable firm.

As an employer, I have often been impressed by certain applicants and did not hesitate to offer them positions. There have been instances where the response was that they were waiting for other offers. This is fine; however, employers have some time limitations as well. Hiring of personnel is often related to existing or projected workloads. If you delay for too long a period, that employment offer may go to someone else. If you first work with groupings of preferred firms you may avoid this situation. Should any of your top preferred firms offer you a position, you should be able to make a decision without any hesitation.

It is always important to set goals when seeking employment. That much sought after position in a coveted firm is attainable through conscientious planning and preparation.

Figure 2.1 Sample Letter of Interest



JD

John Doe

2020 S. King Street, Honolulu, Hawaii 96826
Phone No. (808) 949-1601
Fax No. (808) 942-0054
Email: johndoe@hawaiisr.com

June 12, 2000

ABC ARCHITECTS
888 Front Street, Suite 888
Honolulu, Hawaii 96814

Attention: Mr. Jack Smith, Partner
Subject: Request for Employment as an Intern Architect

Dear Mr. Smith:

I would like to express my interest in applying for a position as an intern architect with your firm. I have admired many of your projects and am very interested in becoming a member of your design team. I believe that I will greatly benefit from my association with your firm and will strive to make a positive contribution toward your future projects.

Attached for your review and consideration are my resume and samples of my work. I would like very much to schedule an interview that includes an opportunity to present my comprehensive portfolio to you.

Thank you very much.

Sincerely,

(Signature)
John Doe

3 THE WORKPLACE

3.1 CHAPTER PURPOSE

After entering the workplace, the intern architect needs to adjust to his or her new surroundings. This will be a little different from what was experienced in school, but the experiences in the design studio should help to give some indication of things to come. The intern architect may also have been exposed to various architectural offices and operations through visits set up by classes at his or her architectural school. The professional workplace will now allow the intern architect to gain his or her own first-hand experience.

Chapter 3, The Workplace, provides the intern architect an understanding of the workings within the architectural workplace and the architectural profession. Discussions will be provided pertaining to what might be expected of the intern architect, roles within the firm, as well as the roles of consultants, the client, and the contractor. Other areas of interest to the intern architect are also covered.
Note: All figures described or referenced are located at the end of the chapter.

3.2 ROLES

3.21 The Intern Architect

The intern architect is usually unaware of the various roles involved in the first encounter with an architectural office. An intern architect's involvement within the architectural office should include a multitude of skills and application activities designed to fulfill the IDP Core Competency Categories[8]. The Intern Development Program is designed to provide one with the necessary training to qualify for taking the licensing examination. Sixteen separate categories of skills and activities provide a gauge by which the intern architect can determine whether satisfactory progress is being made.

I wish my education had covered more in regard to how things would be in the workplace. When I started at Gruen Associates, I had no idea of what to expect. I wasn't sure of what a person at my entry level was expected to do. Basically, I knew that work started at 8:30 AM, we had 10-minute breaks at 10:00 AM and 3:00 PM, lunch was between 12:00 PM and 1:00 PM and that work ended at 5:30 PM. I would have been better prepared if I had been given more exposure to professional architectural environments during college.

Much of my learning came from those who were nice enough to spend their time explaining and teaching me how to do things. Any type of mentoring is of great value to a person just starting out. Learning and sharing of knowledge with peers provides great interaction both at work and outside of work. Many strong friendships were forged during my internship period. We all worked hard on our assignments and were very happy to be working together during that period. We all tried our best to advance within the company. What has been wonderful is seeing how we all have progressed over the years. Many have gone on to other firms yet we do still keep in touch.

The intern architect should recognize the importance of communication with employers and colleagues. This tool is a vehicle for much learning and development. Many strong associations will be forged by maintaining these lines of communication.

3.22 IDP Core Competency Categories

The following information represents the requirements of the NCARB's Intern Development Program (IDP)[8]. The categories represent those areas of competencies that the intern architect is expected to achieve in order to be eligible for his or her architectural licensing examination. The items listed under each category represent skills and application activities.

1. Programming

1.1	Evaluate design alternatives as they relate to program requirements by developing and writing the following: a. the qualitative and quantitative requirements for a project, b. questions for an owner/user interview, and c. a checklist for an owner/user survey
1.2	Investigate and document the work process for a particular user
1.3	Prepare functional relationship/adjacency diagrams
1.4	Use efficiency factors to set gross area requirements
1.5	Relate the budget and schedule to the owner's program
1.6	Determine future areas for phasing, growth and development
1.7	Analyze owner-supplied data and document programmatic implications
1.8	Understand the legal implications of architectural practice relative to the pre-design phase

2. Environmental Analysis

2.1	Location options on one site
2.2	Regulator restrictions (e.g. parking, zoning, codes, ADA)
2.3	Natural conditions (e.g. topography, vegetation, climate)
2.4	Constructed conditions (e.g. infrastructure, building foundation)
2.5	Input from consultants (e.g. landscape architect, geotechnical engineer)
2.6	Input from groups with jurisdictional interest (e.g. environmental impact statements)
2.7	Input from public agencies (e.g. zoning, planning, building, fire)
2.8	Feasibility of alternative sites
2.9	Environmental hazards
2.10	Input from groups with community interest (e.g. community organizations, historic preservation organizations)
2.11	Access to utilities

3. Schematic Design

3.1	Develop a project's program into alternative conceptual design proposals
3.2	Evaluate engineering systems appropriate to the project
3.3	Prepare volume and area calculations and evaluate the cost of alternative design proposals
3.4	Prepare presentation drawings and models
3.5	Review the schematic design with the client and revise the design based on the clients feedback
3.6	Communicate the intent of the design orally, graphically and in writing to facilitate the clients decision-making process
3.7	Coordinate the consultants' activities relative to the schematic design
3.8	Incorporate relevant code requirements into the schematic design

4. Engineering Systems Coordination

4.1	Research and assist in the selection of appropriate engineering systems
4.2	Evaluate the need for consultants
4.3	Coordinate and verify the availability of adequate utilities
4.4	Understand engineering proposals and fee structures
4.5	Coordinate project information with consultants
4.6	Coordinate engineering system documents
4.7	Coordinate the consultants' activities relative to the schematic design.
4.8	Evaluate space requirements and costs

5. Building Cost Analysis

5.1	Prepare preliminary cost analyses using: * unit cost/building type basis (cost/square foot) * unit cost basis (material and labor), and * standard references such as Means and Dodge
5.2	Investigate and prepare quantity calculations for selected materials
5.3	Evaluate life-cycle cost information in relation to specifications
5.4	Research value engineering opportunities
5.5	Evaluate and document scope/quantity/cost in comparison to materials selection and the preparation of specifications
5.6	Factor the current inflation rate and other economic variables into the cost estimates

6. Code Research

6.1	Evaluate design alternatives based on code requirements
6.2	Research all applicable codes
6.3	Develop a life safety analysis
6.4	Participate in preliminary meeting with code officials and make design adjustments to reflect compliance with relevant codes
6.5	Evaluate and document scope/quantity/cost in comparison to materials selection and the preparation of specifications
6.6	Develop a list of required agency approvals during final project reviews

7. Design Development

7.1	Prepare design development documents from the approved schematic design
7.2	Participate in discussions with the client regarding project scope, quality and cost
7.3	Incorporate appropriate levels of detail in drawings and outline specifications

7.4	Document client meetings and evaluate their impact on the design program
7.5	Identify conflicts between building systems and coordinate the work of consultants in resolving these problems
7.6	Ensure that the specifications and drawings conform to previously established requirements and meet applicable codes

8. Construction Documents

8.1	Outline mock-ups of project drawing sets
8.2	Prepare plan, elevation and section drawings that clearly convey the design development documents
8.3	Coordinate and cross-reference documents including the work of consultants
8.4	Document all meetings and evaluate their impact on the construction documents
8.5	Check the program for discrepancies between the design development and construction documents
8.6	Assist the client in obtaining required approvals and permits
8.7	Prepare a schedule for preparation of construction documents with milestone markers and reviews

9. Specifications and Materials Research

9.1	Investigate product literature or question representatives about materials selection information useful in the preparation of specifications
9.2	Review and compare outline specifications with the project manual
9.3	Prepare a descriptive and reference standard specification
9.4	Prepare a preliminary project description, outline specifications and construction specifications
9.5	Articulate and produce a logical and sequential plan based on the specifications (production sequence flow chart) for consultants and clients/owners

10. Document Checking and Coordination

10.1	Develop a list of all project drawings and other documents, including brief descriptions of their contents
10.2	Assist in cross-checking products and materials called for in the specifications for consistency with corresponding terminology and descriptions in the construction documents
10.3	Coordinate drawings prepared by others for accuracy of dimensions, notes and indicator abbreviations
10.4	Assist in developing a schedule of lead time required for proper coordination with other disciplines
10.5	Check consultants' drawings with architectural drawings and other consultant[g] drawings for possible conflicts and interference of plumbing lines, ductwork, electrical fixtures, etc.
10.6	Assist in final documents review for compliance with applicable codes, regulations, etc.
10.7	Apply standard document checking procedures, and make revisions and corrections from outline mock-ups, red-lined drawings and project document sets

11. Bidding and Contract Negotiation

11.1	Prepare bidding documents and maintain the distribution register
11.2	Research and prepare an addendum and a bulletin
11.3	Assess requests for substitutions
11.4	Create bids for large and small projects and justify their cost-effectiveness
11.5	Develop and illustrate a comparative analysis of bids
11.6	Compare bids with actual costs

11.7	Attend a bid opening and observe the bidding process

12. Construction Phase-Office

12.1	Attend pre-construction conference
12.2	Prepare a certificate of substantial completion
12.3	Participate in verifying the punch list submitted by the contractor
12.4	Manage, review and coordinate the shop drawings, samples and other items submitted by the contractor
12.5	Process change orders, RFI's and requests for clarifications
12.6	Document conflicts that occur during the construction process and propose at least two alternative resolutions to a given conflict
12.7	Obtain information and submittals required for the notice to proceed
12.8	Maintain communication with everyone involved in the construction process, including the owner
12.9	Review and approve estimates for payment

13. Construction Phase-Observation

13.1	Document unforeseen conditions that arise during construction and develop several alternative solutions to resolve these problems
13.2	Review field meeting agendas and attend meetings when appropriate
13.3	Verify the completion of punch list tasks
13.4	Verify monthly request for payment
13.5	Take minutes at a weekly job site meeting

14. Project Management

14.1	Assess time requirements for all project tasks
14.2	Develop a project work plan that includes task/responsibility definitions, personnel requirements, schedule and budget
14.3	Evaluate project work progress
14.4	Manage project reviews and coordination through participation in meetings
14.5	Prepare a schedule of client billings
14.6	Participate in and document the project close-out process
14.7	Participate in the dispute resolution process
14.8	Establish initial client invoices per contracts
14.9	Manage consultants and review all contracts and billings approvals

15. Office Management

15.1	Review economic trends, forecasts and indicators in relation to the firm's markets
15.2	Review the firm's organization
15.3	Participate in the firm's marketing process
15.4	Assist in interviewing for a project
15.5	Participate in establishing opportunities for professional collaboration, team building, consensus building and conflict resolution
15.6	Research benefits offered by the firm including health and disability insurance, annual leave and pension plans
15.7	Calculate your total compensation figure
15.8	Prepare interview questions for employment candidates
15.9	Participate in the interview process
15.10	Understand the ratios used by the firm to track its performance

16. Professional and Community Service

16.1	Participate in a professional association by volunteering to serve on committees and related service activities. Training units cannot be earned for attendance only at seminars, meetings or conferences
16.2	Provide career counseling/mentorship for high school and college students
16.3	Take an active role in national, state and local government affairs
16.4	Conduct educational programs about the profession in elementary and secondary schools
16.5	Participate in civic organizations, neighborhood groups, museum programs and other activities addressing such issues as homelessness, natural disasters, historic preservation, resource conservation and environmental awareness
16.6	Participate as a member or consultant to a local zoning board, planning committee, fine arts review board or similar community-based organizations

The different tasks represent activities that are designed to develop one's understanding of the profession. The conscientious participation and commitment by the intern architect and the mentor (IDP firm) will result in a well-rounded and knowledgeable comprehension of the skills required to successfully complete the licensing examinations. Completion of IDP requirements indicates that the intern architect has been involved with or has become knowledgeable of all the activities listed under each of the sixteen categories. Upon fulfilling the IDP program requirements, one's perception of the profession should be at a level sufficient to carry one into the next levels of professional development.

3.23 IDP Training Requirement

The intern architect must acquire 700 training units to satisfy the IDP training requirement. One training unit equals eight hours of acceptable activity in a given training area. The following chart lists the IDP categories and areas and the required training units for each. Information pertaining to IDP training requirements was extracted from NCARB's *INTERN DEVELOPMENT PROGRAM GUIDELINES, 1998-1999* [8].

CATEGORY A: DESIGN AND CONSTRUCTION DOCUMENTS	**MINIMUM TRAINING UNITS REQUIRED**
1. Programming	10
2. Site and Environmental analysis	10
3. Schematic Design	15
4. Engineering Systems Coordination	15
5. Building Cost Analysis	10
6. Code Research	15
7. Design Development	40
8. Construction Documents	135
9. Specifications and Materials Research	15
10. Document Checking and Coordination	10
Total Training Units Required	**350***

***This total includes the 275 minimum training units required, plus 75 additional training units that must be earned in any of the training areas 1-10.**

CATEGORY B: CONSTRUCTION ADMINISTRATION	
11. Bidding and Contract Negotiation	10
12. Construction Phase— Office	15
13. Construction Phase — Observation	15
Total Training Units Required	**70***

***This total includes the 40 minimum training units required, plus 30 additional training units that must be earned in any of the training areas 11-13.**

CATEGORY C: MANAGEMENT

14. Project Management	15
15. Office Management	10
Total Training Units Required	**35***

***This total includes the 25 minimum training units required, plus 10 additional training units that must be**

CATEGORY D: RELATED ACTIVITIES

16. Professional and Community Service	10
Other Related Activities	0
Total Training Units Required	**10**

TOTAL IDP TRAINING UNITS REQUIRED	**700**

The required minimum in Categories A, B, C, and D totals 465 training units. The additional 235 training units may be acquired in any of the listed categories.

The 700 training units amount to a total of 5,600 hours. If evaluated further, at 173.33 average work hours per month, this translates to 32.31 months or approximately 2 years and 8 months of training as an intern architect. This represents (approximately) the minimum time period before attempting examination. The requirements of each category would have to be satisfactorily met. It is important that the intern architect discusses his or her plans pertaining to licensing with their new employer.

Training programs vary from firm to firm. We have always accelerated the development of our intern architects. They are provided with a broad exposure to many of our firm's projects and activities. Within our context, the intern architect would work on many projects under a supervisor. This would entail assignments to fulfill needs for a number of projects. This may consist of the following activities: design, production drawings, research, field investigation, presentations, attending meetings, assisting with project coordination, etc. The intern architect's title would be project coordinator. Titles vary at different firms for entry-level positions. Intern architects may be described as architectural assistants, aides, etc. After a suitable period of time, the intern architect's role would also include being project coordinator on one's own project. This would be in addition to assisting on other projects.

The designation of project coordinator appears synonymous to the IDP intern architect title. As a project coordinator, he or she would be responsible to coordinate the efforts of their own project under the supervision of a project architect or a project manager. All work is done under the auspices of a principal architect. All requests for information or clarification would be generated through the intern architect. He or she would become the vehicle through which the project scheduling is maintained. One would be required to record proceedings at meetings and prepare minutes for review, approval, and transmittal by one’s supervisor.

The following is a position description from the Pacific Architects, Inc. Employee Handbook [9] that serves as a general guideline for development as a project coordinator:

1. Be proficient and productive in CAD. Demonstrate a firm understanding of the office CAD standard.

2. Act as the coordinator for all graphics for the assigned project. Keep current status on drawings. Make recommendations to the Project Manager on CAD standards particular to the project and for organizing and maintaining a project file system, line weight and layering organization. Assist the Project Architect/Manager in assuring that the work is accurate, timely and of the highest quality.

3. Assume the position as the point of contact for the project. Receive all requests and route information as necessary.

4. Assist the Project Architect/Manager in developing drawings for the assigned projects. Be knowledgeable in the number of sheets required for the project and be able to provide the Project Architect/Manager with an assessment of the progress toward completion.

5. Take notes at meetings and prepare minutes for review by the Project Architect or Project Manager, as directed.

6. Be aware of project due dates and make recommendations if additional working hours and/or personnel are required to complete on time.

7. Assist with technical and support duties as required and/or requested by the Project Architect/Manager.

8. Assist with special project needs and outside office errands.

9. Assist with client presentations (i.e. models, boards, elevations, renderings).

10. Be actively engaged in the intern development program (IDP) and qualification as an architect. Make periodic progress reports to the assigned mentor as requested. Ask to participate in officer projects that would help fulfill IDP requirements.

11. Learn and strive to fulfill the duties of a Project manager.

The experiences of each intern architect will vary due to circumstances of the firms or the individuals. Enrollment in the Intern Development Program (IDP) will be invaluable to the intern architect's development. Remember, if enrolled within 6 months of graduation, the fee is a mere $75. After that, the amount is $350. This

is a worthwhile investment toward one's future as an architect. Not only will the intern's experience be accurately recorded and maintained by NCARB, one will have access to an extensive amount of information.

3.24 The Architectural Firm

The role of the architectural firm is to provide professional design services for the needs of clients. There are a number of roles established within the architectural firms that are typical in most organizations. Descriptions for the following positions are derived from *The Architect's Handbook of Professional Practice*[10].

Principal/partner: Person with an equity position in the firm.

Associate: Senior management-level architect who does not hold equity in the firm; typically responsible for major department(s) or functions; reports to a principal.

Manager: Licensed architect; typically with 10 years experience; has overall project management responsibility for a variety of projects or project teams, including client contact, scheduling, and budgeting.

Architect III: Licensed architect, typically with 8-10 years experience; usually responsible for day-to-day management of a significant project or projects.

Architect II: Licensed architect, typically with 6-8 years experience; usually responsible for daily design and/or technical development of a project or projects.

Architect I: Recently licensed architect, typically with 3-6 years experience; responsible for parts of a project with parameters set by others.

Intern: An unlicensed architecture school graduate with less than 3 years experience; usually develops design and/or technical solutions under the supervision of an architect.

Technical staff Mechanical, electrical, or structural engineer; landscape architect; interior designer; CAD operator; drafter; and other technical staff.

Non-technical staff Controller/bookkeeper, marketing staff, office manager, secretary, and other nontechnical staff.

There are defined roles established by experiences and responsibilities. The composition of firms and the roles of their personnel will vary. The preceding descriptions of positions indicate the hierarchy of most architectural firms. This will give the intern architect an idea as to where one might want to be in the future. With each step up the corporate ladder comes the burden of additional

responsibilities.

3.25 The Consultants

Architects are normally designated as the prime consultant. It is the architect's responsibility as the prime or lead consultant to decide what disciplines are required for the project at hand. In order to provide the necessary services, the architect needs to establish a design team for the project. Architects are responsible for coordinating all of the sub-consultants' work to ensure that the project scope has been fulfilled to the satisfaction of the client. There are numerous considerations in terms of setting up a design team. Firms may work with a number of sub-consultants in various combinations to fulfill a design team's needs. The following is a list of some consulting disciplines:

Structural Engineers
Mechanical and Plumbing Engineers
Electrical Engineers
Civil Engineers
Landscape Architects
Cost Estimators
Specification Writers
Life/Safety and Fire Protection Engineers

Food Service Consultants
Interior Designers
Acoustic Engineers
Sound and Lighting Consultants
Topographic Surveyors (Land)
Hydrographic Surveyors (Water)
Geo-technical Engineers (Soils)
Environmental Engineers
Traffic and Transportation Engineers
Sanitary Engineers
Archaeological Consultants
Oceanographic Engineers

Appraisers
Realtors
Facilitators

There are multitudes of other disciplines that contribute to numerous project types. The list of specialists who provide information and expertise for projects is unlimited. If architects need to address any particular topic relating to any project, they will probably have to evaluate who their best source might be and seek out that expert. One needs to always provide the best results for one's projects.

There are instances when consultants might ask the architect to assist them on

certain projects where there is a need for architectural services. In those cases, the architect assumes the position of a sub-consultant. A role reversal occurs. The prime consultant would set all schedules and deadlines, be responsible overall for the project, and be directly answerable to the client. The submittals would be made through the prime consultant.

The standard role of the architect as the prime consultant justifies the intern architect's exposure to many course subjects throughout his or her college career. The study of various engineering disciplines gives the intern architect a familiarity with the systems to be implemented for projects. The exposure to the language or jargon of each profession prepares the intern architect to understand the roles and needs of the various disciplines. The intern architect would also have a general knowledge of the duties of the various sub-consultants. The rest should be absorbed over the course of one's career.

3.26 The Client

A **client** as described by *Riverside Webster's II Dictionary* is " *1. One who secures the professional services of another. 2. A customer: patron."* [11] Clients come in many forms. They could be a couple who wants to build a new home; a shop owner who wants to remodel his store; a manufacturer who wants to build a new warehouse; a hotel that wants to upgrade its property; or a government agency responsible for the maintenance of existing facilities and for building new structures. The architect serves as the client's representative through the entire building procurement process. He or she represents the client in dealing with consultants, contractors, government agencies, etc. In the private sector, the architect, will in some cases, prepare the contract to be signed between the owner and contractor for the construction of the project.

The architect's role is to provide the services necessary to fulfill the client's needs and wishes. It is important to remember that the client is the one that who pays the bills thereby making it possible for the architect to remain in business. It is the architect's responsibility to provide efficient and cost effective solutions to meet the client's project requirement. The architect must be sensitive to the client's needs. The success of the architect's services is normally rewarded by repeat commissions to perform work or by references clients make to others.

According to *The Architect's Handbook of Professional Practice,* a central ingredient in most successful design projects is a good client. Some clients have a clear idea of program, budget, and other project objectives, including the final appearance of the building. Others look to their architect to help them define the project objectives, as well as to design a building that meets these goals. In both cases, the effectiveness of the marriage between client and architect is a major *factor in making design decisions throughout the project. "*[10]

A key to good services and a successful project is good communications. Service at all levels throughout the firm needs to be impeccable. The intern architect needs to be aware that everyone within the company makes a difference. Appearance

and performance by all members of the firm is extremely important.

There is usually a play of terms relating to the term, the client. There might, in the course of one's internship, be references also made to owner or user. The client would be the one who secures the professional services of the architect. The client could in some cases be the owner or a person or entity given the authority to represent the owner. The user would be the persons or entity occupying or utilizing the facility. It is possible that the client, owner, and user might be one and the same.

3.27 The Contractor

A contractor is defined in *The Architect's Handbook of Professional Practice* as "(1) One who enters into a contract: (2) In construction terminology, the person or entity responsible for performing the work under the contract for construction."[10]

The three components of any standard project are comprised of three entities: the owner, the architect, and the contractor. There is a strong parallel between the design and the construction organizations. The role of the general contractor is similar to the role of the architect. The general contractor is responsible for the overall project and is answerable to the owner. The specialty or sub-contractors are similar to an architect's sub-consultants. Unless special contracts are drawn up with the owner, all work is contracted between the owner and the general contractor. The general contractor deals with his sub-contractors just as the architect deals with his or her sub-consultants.

The architect usually helps the owner in selecting a contractor. The contractor may be selected through negotiation or through low bid. Another method of selection is based on a combination of performance criteria and low bid. The agreement or contract is prepared by the architect and agreed to by both the owner and the contractor. Each party's role and responsibility are described within the contract agreement. It is best to utilize an AIA contract document for clarity and to minimize any misunderstandings.

The architect's role during construction includes: pre-construction meetings; intermittent site observations to establish conformance to design intent; review of submittals and shop drawings; review and certification of contractor payment requests; final inspections and final project acceptance. It should be noted that reference to final inspections occurs upon completion of the project and is a scheduled event that is normally accomplished with the owner and contractor present. Architects generally only observe unless special inspection services are requested and paid for by the owner. The architect ensures that all the required warranties submitted by the general contractor are complete along with any maintenance provisions that should be provided to the owner. This should be submitted in a folder.

It is important for the architects to be familiar with the various contractors and their performances. Over time, the architect will become familiar with the type, size, and quality of work performed by different contractors. Even the intern architect should note the performances of the contractors for his or her future reference.

3.3 DUTIES

There are certain things that employers hope to see in the development of an intern architect. The first thing would be to establish the individual's level of reliability. Being on time for work is a very important consideration. If the intern architect cannot be on time for work, there is a possibility that he or she will be late for an assignment, a meeting, deadline or something very important. This indicates that the individual has not taken his obligation to the firm very seriously.

It has always been my premise that the profession requires that individuals be responsible and professional. There should also be a concern for the employer's or supervisor's feelings. I have chosen as a key thought for my practice that we should be responsible, professional, and personal. I have always undertaken my responsibilities with the idea that I must perform to the best of my abilities or I will lose everything. In essence, if you lose your reputation, you have nothing. In the future, if you do not prepare for this mindset, you may lose your practice, or something else of great value to you.

You should always be willing to assume responsibility for whatever is thrown at you. Even the most undesirable or seemingly unrelated duties will have some value to you in the future. Normally, there are reasons for assigning tasks to new intern architects. You will understand how to do things as well as how others feel when they are directed to accomplish those same tasks. You will become a better supervisor or a better boss. Along with everything, you will gain the respect of others for having done what they are being asked to undertake.

It is always impressive to note employees who have the presence of mind to come in a little early so that they might start their work on time. The employer likes to feel that he is getting a good productive day's work from his staff members. It is easy to recognize those who are serious about doing their jobs. It is very refreshing and reassuring for the employer to know that he or she has someone to rely on. Promotions and raises are easier to give to hard workers. Many firms are looking for people who have a potential to run the company. Firms cannot survive without having strong, reliable people.

3.4 APPEARANCE AND ATTITUDE

One's appearance is important. Dressing appropriately does make a difference in the workplace. The intern architect should always be neat, presentable, and appropriately dressed. One should take note of how others within the firm are attired.

While working in Los Angeles, one of the vice-presidents (a very good friend) pulled me aside to have a discussion about dressing better for work. Although I was presentable in dress shirts and slacks, he said that it would be appropriate for me to wear a tie and sport coat or suit to the office. He said that they had plans for me and it would help if I were to improve my dress. Shortly thereafter, I became more active in dealing with clients, as well as attending many meetings outside of the office.

Currently, even when our staff goes out to do some fairly messy fieldwork, I always advise them that they should keep some regular work clothes to change into after their return to the office. You never know when you need to go out to an important meeting or when someone needs to stop by to see you. Dressing appropriately sometimes helps to bring an aura of maturity to the intern architect. People will judge you on your performance, and it helps if your appearance gives you that distinguished, experienced look. In general, it is to your advantage if you are able to look and act a little older than you actually are. If you were an employer, or a client, what type of person would you prefer to deal with or have representing you?

Upon entering the workplace as a new intern architect, the attitude presented on the very first day will dictate what one's future will be like in that company. It helps to be confident but not excessively self-confident. One needs to know one's capabilities as well as one's limitations.

I was told by a good friend (and mentor) along the way that "there's two ways to succeed: one by talking and the other by doing. How do you want to do it?" I chose the latter. You should develop your attitude to absorb as much as the firm is willing to teach you. There are those that want to teach you. Take full advantage of the situation. There is so much to learn in your quest to become a good architect. Develop a positive attitude of always trying to learn whatever you can from every opportunity. Knowledge is always valuable.

Being a team player is very important. The intern architect needs to show that he or she is a team player in regard to working together with firm members in producing good quality projects as well as in advancing and developing the firm. The intern architect should take every opportunity to meet certain challenges that the firm provides. There are instances when one must compete with others, especially in a large firm. Despite the competition, the concern should be for the best interest and development of the firm. This should always be foremost. The intern architect should be a part of the business in every way. One should always take pride in office accomplishments, keep the office neat, and help others whenever possible. These actions do not go unnoticed or without appreciation.

Many times, promotions are made to elevate people from within the organization. If given that opportunity, one must seize the moment.

When working in Los Angeles, I was given an opportunity to become a job captain and run my own projects with a staff of six to eight people. Although I felt that I did not possess the appropriate experience for the position, I was honored that my boss had confidence in me. I accepted the challenge. Many evenings and weekends were spent in the office looking at old drawings, details, specifications, and references. What I lacked in knowledge I acquired through persistence. I would spend many evenings and early mornings, weekends and holidays checking or preparing work for my staff members. It was a very trying yet meaningful experience.

Many intern architects and professionals have developed a habit of responding with "I don't know." One should be aware that this is not an appropriate response. The client pays the firm to know. There are more suitable responses. The fact is that the intern architect should know what to do or where to get the appropriate information.

I have always professed that "I don't know" is not an answer. I often hear people say "I don't know but ..." and continue on endlessly. I try to discourage my staff from using these words. I believe that a person will appear more confident and will develop a habit of providing immediate action if the responses were "I'm not certain, but I'll get the information for you immediately; or we'll have to confirm that with our engineers"; or something to that effect. You need to be confident in regard to your image, performance, and accountability.

In order to build self-confidence, the intern architect must avoid any guessing. One must verify as much information as possible. He or she should verify information with references, manuals, with contractors, distributors, etc. Even in the preparation of drawings, employees are expected to ask questions if they do not know what is being drawn. Every line must be accounted for and have meaning. Too often, seemingly simple drawings are assigned to intern architects to use as references or samples. Intern architects have discovered errors in drawings and details simply by asking their project manager or project architect for clarification. Being accurate provides dependable results.

3.5 ORGANIZATION

The intern architect should be aware of two types of organization. One pertains to the neatness of a workstation. Neatness always makes for a good impression and allows easy access to things. The other deals with the organization of documents and information according to a CSI (Construction Specifications Institute) Format.

There are two components to the preparation of construction bid documents: the development of working drawings or blueprints, and the specifications or written requirements for materials, equipment, construction systems, standards, and workmanship. The MASTERFORMAT was developed to establish a master list of section titles and numbers to create an organization of individual specification sections. The intern architect should keep this in mind when maintaining project

information. One might in some cases keep a project folder or binder organized under the CSI Format:

Division 1 General Requirements
Division 2 Site Work
Division 3 Concrete
Division 4 Masonry
Division 5 Metals
Division 6 Wood and Plastics
Division 7 Thermal and Moisture Protection
Division 8 Doors and Windows
Division 9 Finishes
Division 10 Specialties
Division 11 Equipment
Division 12 Furnishings
Division 13 Special Construction
Division 14 Conveying Systems
Division 15 Mechanical
Division 16 Electrical

The intern architect will get more in-depth information regarding specific and detailed sections under each division through the CSI organization or through a viewing of the *Sweet's General Building & Renovation Catalog File* [12] or through the *RS Means Building Construction Cost Data* [13]. Additional data may be derived via the Internet.

3.6 EXTRA-CURRICULAR ACTIVITIES

The intern architect should consider getting involved in extra-curricular activities on a professional and a community level. Doing so will provide one with the opportunity to interact with other people. The interaction will give invaluable experience and additional exposure within the field. Early on in a career, an intern architect should become active so that one's name becomes recognizable in the social and professional circles. The name recognition and exposure will influence advancement through the ranks of other intern architects and through one's professional career. Enrollment as an associate AIA member or continued involvement with one's architectural alumni association will provide an opportunity to stay abreast of developments pertaining to the profession.

One's participation with groups that help the community can provide one with certain benefits. **Christmas in April** and **Habitat for Humanity** are two non-profit organizations that provide services for the needy through construction efforts. They may be involved in projects like building wheelchair ramps for the elderly or an addition to remedy overcrowding for a needy family. The intern architect will benefit through interaction with others trying to make a difference; having hands-on experience in construction; and the satisfaction of having helped to improve someone's quality of life.

Category 16 of the IDP Core Competency Categories [8] pertains to Professional and Community Service. The intern architect needs to provide 10 training units or 80 hours to meet his or her IDP requirements. One needs to reflect on one's accomplishments and one's personal development as an intern architect. One should always challenge oneself to be better or to do more. The intern architect needs to be current with professional developments.

3.7 COMPENSATION

The intern architect must weigh compensation considerations from several perspectives. He or she should have an idea of what one's value is or should be. This may be accomplished by networking with classmates or previous graduates.

As an employer, I believe that the staff should be satisfied with their compensation, so we make every effort to meet their needs upon entering the firm. It is then up to the individual to perform up to a standard to justify that amount. Increases will then be measured by performance, development, and contribution to the firm. Every firm has its standards of compensation.

The intern architect must also consider whether the firm will develop a person to his or her fullest potential. This is also a form of compensation. One must realize that upon entering the firm, the employer has no real understanding of one's capabilities. The employer only has one's portfolio of work and a sixth sense. The intern architect must display a willingness to learn and advance.

In the training of our intern architects, we normally assign them to their own project so that they may learn how to coordinate the work as well as deal with consultants and at times with the client. Although it is usually a small project, I am normally not able to charge the client nearly as much as the project may cost me. There are times that I have been able to recover only one third of what I have paid out for the training exercise. We attribute the loss to being part of a learning curve. We expect that any losses will be recovered once the staff member gains confidence and is able to become a strong, contributing member.

The intern architect might be familiar with the term overhead. This is a calculated factor that is applied to the employee's direct salary. If the overhead factor is 3.0, it costs the company $2 for every $1 the intern architect may earn. The overhead factor represents all the costs related to keeping the business going. It includes things like rent, utilities, supplies, equipment costs and leases, wages for administrative staff, payroll and social security tax, business tax, maintenance, insurance, etc. Direct cost is that which is directly attributable to a project. Indirect costs are the remaining costs necessary to maintain the business. In order for a company to break even in its investment in the intern architect, the firm needs to produce income equal to three times his or her salary.

As discussed, the employer has a sizeable interest in the development of the intern architect. He has invested his time and that of his staff members toward helping the intern architect to develop. The fact that the employer has confidence in the intern architect should give one some encouragement to being the best that one can be.

4 PERFORMANCE

4.1 CHAPTER PURPOSE

Once one has secured an intern architect position, one needs to know how to survive in the workplace. Chapter 4, Performance, contains additional tips and information to assist the intern architect in the performance of his or her duties. Knowing where to look and what to do will help to ease one's anxiety under certain circumstances. Being familiar with the responsibilities as well as certain processes will provide one with an opportunity to perform at a higher level.

Note: All figures described or referenced are located at the end of the chapter.

4.2 PERSONAL LIBRARY

It is highly recommended that the intern architect establish his or her personal library at work. Having one's own references will provide an opportunity to find much information without having to leave one's workstation. The intern architect can be more efficient and productive. One probably already has several references and books on hand to take to the workplace:

1. The *Manual of Steel Construction* [14] by the American Institute of Steel Construction, Inc. is most helpful in providing a wealth of information such as steel member sizes, material properties, formulas, math and conversion tables, and etc.

2. *Mechanical and Electrical Systems* [15] by McGinnes provides background information regarding different types of systems. The intern architect should read about systems if employed in a project. The book can provide a better understanding of a project and help the intern architect to communicate intelligently with the mechanical and electrical engineers.

3. *Simplified Site Engineering for Architects and Builders* [16] by Parker and MacGuire contains information regarding surveying, contours, cut and fill computations, drainage, site selection, etc.

4. *Architectural Graphic Standards* [17] by Ramsey and Sleeper provides illustrations for details, tables and symbols, dimensions, measurements, etc. and informs vast information.

5. *Time-Saver Standards for Architectural Design Data* [18] by Callender is similar to Graphic Standards and provides a crosscheck on information. It also contains other useful information.

6. *Time-Saver Standards for Building Types* [19] by De Chiara and Callendar provides reference material pertaining to many building and project types and can be a helpful starting point for researching new assignments.

7. The *Douglas Fir Use Book* [20] produced by the West Coast Lumbermen's Association provides information on timber including product information, formulas and diagrams, selection tables, and connection information. Knowledge gained from the book can boost one's confidence in working with wood construction requirements.

There are many other helpful books and references. A dictionary close at hand can ensure that the intern architect uses correct terminology and spelling. Perfection in everything is what professionals should strive for. The *Uniform Building Code (UBC)* [21] or other applicable building code is another reference that can help the intern architect. The intern architect should also maintain his or her own copy of city and county codes for respective areas. One should build up a personal library at work to suit his or her needs.

Many of the books I had used as references during school provided me with confidence when I entered the workplace. I was able to find information quickly, and the training in school prepared me to apply that information properly. You might be interested to know that I still have many of those books that I first carried into the workplace. They proved to be a wise investment. You should consider extending your library. I have kept many books on hand for references when I needed it. As an example, I purchased several books pertaining to tropical plants to help me understand which plants would be appropriate for certain uses. Although I would leave the designing to the landscape architect, I could at least understand a little about his selections and how the end results would look (sizes, shapes, colors, etc.). I was able to visualize the color scheme or the rhythm of the landscape complementing the building design.

One of the advantages of acquiring an array of books is to better service different interests and clients. I once had a need to purchase an English- Hawaiian dictionary. I was asked by a prominent landowner to assist a
Hawaiian immersion school in their efforts to master plan their newly acquired campus. Much of the information provided had been presented in a mixture of English and Hawaiian. Being able to translate all the documents into English made my job a lot easier. I am sure that it will continue to be of help in future situations pertaining to the Hawaiian culture.

Other references that might provide the intern architect with assistance are the Student Edition of *The Architect's Handbook of Professional Practice* [22] and dictionaries pertaining to architecture and/or construction. These references will provide the means to research the definitions and information an intern architect or an architect may need in the future.

It is strongly recommended that the intern architect read extensively in the office, libraries, or bookstores. With access to the Internet, there is much information virtually right at one's fingertips. Reading is a way to expose oneself to a wide range of information that one will find useful. In fact, just looking at pictures and completed buildings will help to develop knowledge of the profession. It will stimulate the intern architect's senses and provide inspiration for designs.

4.3 DOCUMENTATION

Knowing how to prepare and maintain documents will help in one's development as an architect. One must strive to maintain and share pertinent information with the appropriate parties. There are three types of documentation that the intern architect should be aware of. These are maintaining a personal journal, writing telephone memos and taking minutes at meetings.

4.31 Journal

The intern architect should develop and maintain a personal journal. It could be in the form of a daily diary, planner, calendar, or even an appointment book. The following illustrates how keeping such a journal may be of assistance to:

1. Maintain a schedule of appointments as well as maintain a list of things to do.

2. Make brief notes, especially brief telephone memos that have some significance. One should note the time of conversation, with whom, and a brief memo (e.g. Telecon w/Jack Smith @3:30 pm; needs additional info on new system).

3. Use it to jot down notes from informal, short meetings, especially those that occur spontaneously.

4. Always look back in time. Having such records allows one to go back to confirm past occurrences, e.g., yes, that meeting did take place three weeks ago. It allows one to not only look back within the year, but for many years if one diligently maintains a journal.

4.32 Telephone Memos

Telephone memos are formally recorded when certain important matters are discussed. Telephone memos are sometimes referred to as telecon memos (short for telephone conversation memos). Telephone memos should be written or recorded as soon as possible. The memos are written as a record for the office as well as transmitted to the other party to confirm their accuracy of the memo. Normally a time limit is allowed for response regarding the accuracy of a memo. This is to ensure that the other party has reviewed the memo and agrees that it was indeed as it was discussed. It is usually faxed to expedite review and concurrence. Any changes would be corrected and retransmitted. The memo also goes into the project file and would be available at some later date if there is any question

regarding the content of the conversation. The example of a telephone memo illustrated in Figure 4.1 expresses a client's request pertaining to material selection and represents one way to format a telephone memo.

Additionally, the person generating this memo should circulate it to the appropriate firm members or parties affected by this action. Timely sharing of information is always critical.

Every office should have an established format pertaining to its documentation. It is very important for the intern architect to inquire about office policies, standards, and guidelines if they were not provided at the outset. Some of the items may be explained to the intern architect, or one might learn how to accomplish these tasks by being observant or by asking questions. In any event, one should develop a means to record very important conversations and decisions that are often conducted through the telephone.

4.33 Minutes to Meetings

Maintaining minutes to meetings is similar to documenting telephone conversations. It is a little more involved and requires a bit more effort. When a meeting is requested by the architectural firm and is held in that firm's office, the following should be accomplished by the project coordinator (or intern architect):

1. Prepare an agenda for the meeting listing the topics and sequence of discussion (under direction of the project manager or project architect).

2. Prepare a sign-up sheet for the attendees. This should be a pre-printed sheet with the project name, date, time and place of meeting. Space should be provided for the attendees' names, affiliation/company, phone, fax number, and e-mail address.

3. Ensure that sufficient seating is available and that audio visual aids are set up, if required.

4. Make sure copies of material to be distributed and references are prepared and/or laid out in the conference room.

5. Coordinate meals or refreshments, especially if an extended meeting is planned.

It helps if one is able to collect the sign-in sheet as soon as the last person is recorded. This provides a familiarity of the attendees to determine their company and their roles right away. Doing so will give firm members an opportunity to follow the meeting with less confusion regarding what is being said and by whom.

There is a need to take as accurate and comprehensive notes as possible, but refrain from recording unimportant or redundant items. This requires that one concentrate

and clearly understand what is being discussed. This will develop understanding of the project. After the meeting, one should review notes and put them in order. Starting from the beginning, locate the items of discussion in the sequence they occurred. Go through the notes to locate other items relative to the discussion. Many times a certain item or subject will be discussed repeatedly over the course of the meeting. It helps to group related topics. Once a draft has been created, one should go through the original notes and check off every item of discussion to make sure that all points have been covered. Staff members and the supervisor who were in attendance should review the draft as well as provide any notes they may have recorded. Request approval to transmit the minutes or have the supervisor transmit them as required.

Minutes to meetings should be documented within a reasonably short time frame. Forty-eight (48) hours should be a reasonable time limit to write the minutes and transmit them to all attendees. A sample format for minutes to a meeting is presented as Figure 4.2.

The following should be considered in reference to Figure 4.2:

1. If the sign-in sheet for the meeting is extensive, one might prefer to indicate that the list of attendees is attached.

2. Meetings normally should follow some format or order. One might notice that the minutes to meetings in Figure 4.2 reflect items pertaining to the site; then the building exterior; followed by the building's interior elements; then contractual or policy concerns.

3. A note pertaining to discrepancies and/or omissions is necessary to allow for review and accuracy of information. Revised items or addenda to the minutes should be distributed in a timely manner.

4. Minutes should be distributed to all parties and/or organizations.

Through today's technological advances, the Internet or e-mail may be utilized to generate documentation. No matter what the means of transmission, it is imperative that one carefully reviews all information being transmitted. One must ensure that the information is transmitted correctly and to the right recipient. Any errors may prove damaging to one's firm or to one's career.

4.34 Transmittals

Another instrument of documentation utilized in architectural offices is the letter of transmittal. There are many instances where intern architects will be told to send copies of plans, specifications, or other documents to others (clients, consultants, contractors, etc.). In order to do so, one needs to prepare a letter of transmittal.

This document allows the firm to maintain an accurate record of whatever is being transmitted, when, where and to whom. Be aware that in transmitting certain documents, it is very important that copies have been retained for the office files.

A sample of a letter of transmittal has been provided as Figure 4.3.

4.4 MEETINGS

Meetings are a means to communicate, coordinate, and share information. The following information pertains to situations where the firm either conducts presentations and meetings, or simply attends meetings. This information is intended to supplement the preceding information pertaining to documentation of minutes to meetings.

As an intern architect, there will be times when one will be asked to assist in preparing for presentations or meetings. One should have an idea of what is involved in this process.

4.41 Conducting Presentations/Meetings

To conduct successful presentations/meetings, the following should be considered:

1. A key is to visualize and anticipate the situation. Establish an orderly sequence of events and be in control of the situation.

2. Plan ahead. Develop an outline and/or a script. Do the homework. Be prepared. A written agenda and a formal sign-in sheet should be ready for distribution.

3. Prepare all presentation materials and make sure that all equipment is accounted for (projectors, easels, laser pointers, extension cords, etc.)

4. Make a dry run (rehearse). Investigate the site if the meeting is to be at another location. Be familiar with the orientation of the room, availability of audio-visual resources, projection screens, tack boards, etc. Find out where the presenter will be located. If possible, it is highly desirable to have meetings at one's own office. This allows one to have relevant files on hand as well as additional back-up resources in terms of equipment and personnel.

5. Go to the location early before the meeting to set up and be prepared to start on time. This will allow one an opportunity to make contact with anyone else who might be there early. This sometimes helps to ease the tension before the meeting and allows one to be more comfortable.

6. Control the situation from the start. Introduce the project/purpose and one's design team.

7. Identify the participants and/or audience.

8. Run on schedule and limit the time for that session. If the meeting runs too long, one may lose focus on one's intent. It is not the quantity, but the quality of the meeting or presentation that is important. Consider the importance of everyone's time, and schedule another meeting if necessary.

9. If overwhelmed with questions, inform participants that questions and concerns shall be recorded and that written responses shall be provided for the participants . There is a need for research and accuracy in providing correct answers for the participants. Rather than responding with "I don't know," consider saying, "I'll find out and get back to you." This is more appropriate than not having a correct answer or guessing. It indicates an intended action. Should the meeting involve many attendees, an alternative might be to have them transmit a list of concerns to one's attention after the meeting.

10. Request feedback from participants; including impressions of the clarity of the presentation or whether the purpose of meeting has been accomplished. Invite questions. End the meeting or presentation positively by thanking everyone for attending and formally announcing the conclusion of the session.

Here are few additional tips that may serve one's development as an intern architect and architect:

1. Always pay attention to the audience. Be aware of facial expressions or gestures. Identify the key people that one needs to communicate with, especially those who will influence decisions. If someone has a puzzled expression, pause and ask for questions or provide clarification. Be attentive and alert.

2. Avoid any display of dissension or confusion (among design team members) openly to the audience or clients in the course of a presentation or meeting. If any discrepancies arise, there is always time to discuss the matter afterwards and then issue a memo of clarification or correction; or if critical, to discretely provide the proper information to the appropriate design team member.

4.42 Attending Meetings

There are certain issues one should consider when one is invited to participate in a meeting. One's role and responsibilities would vary from those applicable to conducting the meeting. These key suggestions to attending meetings may not necessarily apply to intern architects immediately, but they will at least provide some guidance when the situation arises. The following should be considered:

1. Prepare for meetings by familiarizing oneself with the project, issue or topic to be discussed. Do some research to become familiar with the participants and speakers as well.

2. Arrive a little early to meet people. This will allow one to become familiar with other attendees as well as learn of their roles or positions.

3. Always take notes. Even if someone else will record and distribute the formal minutes, one should have one's own reference. Keep track of any discrepancies. It might be helpful to note these on the left margins of one's notepad. One may also add little notes on certain points of discussion in the margins pertaining to clarifications, questions, etc.

4. Let others question and participate too. There are many instances where people are very eager to participate in order to show that they are on top of everything. Pay attention, and cross out discrepancies and questions noted in the margin of the notebook as they are discussed and/or resolved. Near the end, raise questions regarding remaining key items that no one has touched upon. This would indicate to everyone that one is really paying attention and is intelligent enough to address important key concerns that others may have neglected.

5. Ask for a copy of the sign-in list. Often times, by being observant, one will be able to identify unfamiliar individuals based on the order in which they arrived and signed in. One would then be able to connect their positions and roles with their statements and concerns.

6. Do not rush off after the meeting. Stay a little while to meet or interact with those who are interesting or provide assistance to the project. Make every attempt to maintain the contacts that one has established.

4.5 FIELD WORK

There will be times when the intern architect will be asked to do some fieldwork. One should know at least what is expected and how one should prepare for this task. Field investigation is undertaken to verify actual field conditions. It is intended to help one get as much information of the existing conditions as possible. This does not, however, relieve the contractor from verifying conditions prior to and during construction. Elements pertaining to the contractors' responsibility are normally spelled out in the general notes on the title sheet of the drawings or in the general conditions of the specifications.

Although there normally will be subsequent field visits to verify conditions, it is imperative to be as accurate as possible from the initial visit. Establish a habit or pattern of performing a field investigation. A situation could arise where one only has a limited period in which to accomplish the work. This is definitely true when fieldwork is done in some remote location where physical and fiscal reasons may prevent one from conducting additional field trips.

Fieldwork pertaining to projects involving existing buildings is normally quite involved. One example might be a project to repaint the exterior of an existing two-story classroom building for the Department of Education (DOE) in Hawaii. Though seemingly simple, there is much to be considered. The following are steps that may be taken to accomplish the necessary fieldwork and preparation for the ensuing construction documents:

1. The scope of work should be reviewed and verified. The extent of work required to fulfill the client's needs and expectations should be clear.

2. Research must be done to procure existing drawings of the building. This information may be obtained from the Department of Accounting and General Services (DAGS) plan room located adjacent to the Design Branch at the Kalanimoku Building. DAGS is the state agency that coordinates the work for education projects. Originals are sent out for reproduction and delivered to the consultants. In addition, drawings (blueprints) are usually kept at the schools and are available for copying as long as they are returned as soon as possible. The school may have only one set of drawings on which they rely for repairs and for resolving utility problems.

3. Based on information received and reviewed, prepare base or background drawings representing the most current plans. These include: site plans, floor plans, roof plans, reflected ceilings (if covered lanais or walkways exist), exterior building elevations, and building sections, especially if recesses exist or if the building has some interesting features. The number of base drawings must be evaluated and may vary according to how the project is planned.

4. The next step is to arrange for a site visitation. Inform the client (the DAGS project engineer assigned to the job) of the plans and intentions. He normally would arrange for the site visitation or the firm would be allowed to arrange this directly with the school. It is only proper that permission first be granted to do the fieldwork. The school may require an escort or the firm may need to request assistance, e.g., arranging for a ladder to gain access to the roof to check requirements for painting the insides of the parapet or other roof elements.

5. Extensive information should be noted on the base sheets:

    a. On the site plan, one should note the permitted access to the building, as well as staging or loading areas. Also note plans for safety barricades, storage areas, etc.

    b. The floor plans may indicate areas of ingress and egress requiring protection. Location of drinking fountains, hose bibbs, built-in benches, etc. would be noted. Plants and

shrubs that need to be tied or cut back need to be addressed.

c. Roof plans would identify and dimension items requiring painting. The location of the roof scuttle or access would be identified and located; the dimension of the parapet would be given.

d. The reflected ceiling plan should locate all the light fixtures and any items attached to the ceilings. These would need to be removed or protected during the painting.

e. The building elevations identify items needing to be removed or protected: room number plates above the doors, room or building signage on walls, fire bells, light fixtures, drinking fountains, etc. Vertical dimensions also would be provided.

f. Building sections may indicate certain recessed conditions and also provide certain dimensions necessary for estimating. The cut lines between colors need to be identified and dimensioned (e.g. wainscots or cut lines at windows and doors).

6. All information would be taken back to the office to be processed into the contract documents.

7. For projects close in proximity, additional visits may be scheduled to verify any conflicting or unclear information occurring during the development of the contract or working drawings.

8. A final visit would normally occur prior to submittal to ensure accuracy of the drawings.

As a part of this process, one needs to take photographs of the building and existing conditions. There are certain tips that might prove useful to the intern architect. Based on accurate dimensions recorded on the base sheets, one might want to correlate certain key dimensions to one's photos to establish a sense of scale. By taking the known measurement of say a 3' x 8' door next to a sign, one will be able to establish fairly accurate dimensions of the sign from the photo. For certain projects, it may be useful to mount the photos on a board that can be displayed for reference. This becomes especially effective at meetings. The photos may be keyed off of a site plan or floor plan.

The intern architect should make a checklist of all necessary items well in advance of the field trip:

1. A twenty-five foot tape measure as well as a hundred foot tape measure or a hand held laser measuring tool.

2. A camera; lots of memory, and extra batteries.

3. A flashlight.

4. A screwdriver or awl for any probing.

5. A pair of binoculars for checking from a distance.

6. A clipboard for note taking.

7. A tape recorder if preferred for dictating notes.

8. A mirror for observing undersides of doors or other difficult areas.

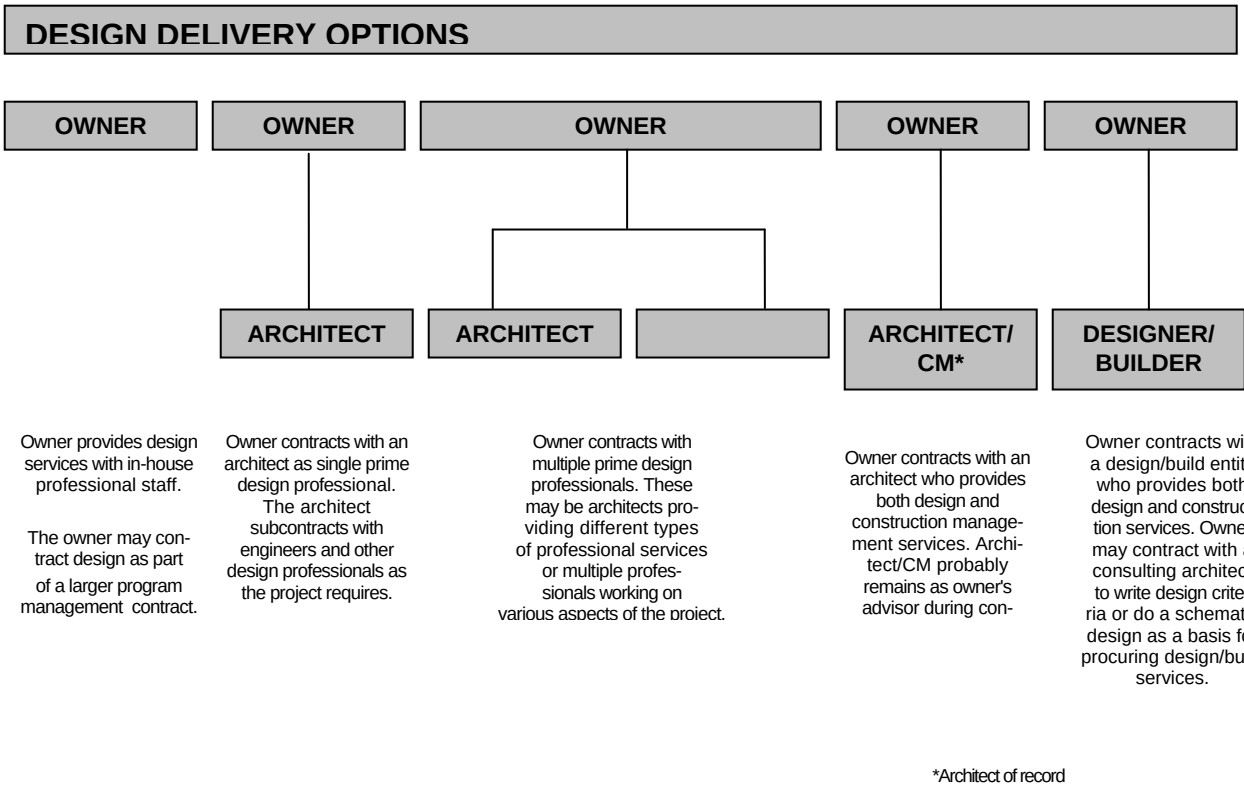
9. A cellular phone.

Accomplishing accurate and effective fieldwork requires quite an effort. There are many different approaches to planning and carrying out fieldwork. They will vary according to project needs and/or office policies and procedures. Certain situations might require that a laptop computer be used in the field.

4.6 DESIGN PROCESSES

There are a number of design delivery options to suit various project situations and needs. These include the conventional method; Functional Analysis Concept Design (FACD) method; the Charette method; the Design/Build method; and the Architect/CM approach.

All design delivery methods can utilize the skills taught in the design studios. This involves the development of architectural or facilities programming. This is defined in the *Architect's Handbook of Professional Practice* as "a written statement setting forth design objectives, constraints, and criteria for a project, including space requirements and relationships, flexibility and expandability, special equipment and systems, and site requirements."[10]



These varying design delivery approaches may vary in length of time regarding process; involvement of individuals, organizations, and/or communities; and the role and contractual responsibility of the architect.

4.61 Conventional or Traditional Methods [23]

The conventional or more traditional approach involves a client contracting directly with an architect as a prime design consultant. The architect is responsible for assembling his or her design team to meet all the requirements of the scope of services. The architect designs the project and prepares construction documents within a suitable time frame agreed upon to meet the client's schedule, need, and budget. The construction documents are either negotiated or bid out. Then the project commences into the construction or building phase.

4.62 Functional Analysis Concept Development (FACD)

The FACD [24] approach to design was created by the Navy's Pacific Division (PACDIV) in Hawaii to promote effective design development for its projects. PACDIV's projects are far reaching and extend beyond the Pacific region into the Indian Ocean (Diego Garcia) and Antarctica. The intent of the process is to assemble a dedicated and coordinated group of participants to define the project's functional requirements, verify project scope, and develop a schematic design.

The advantage to this method is that an acceptable design is developed and signed off by all major parties within a concentrated period of time. This process has gained acceptance and use by various state agencies. Among them are: the Department of Accounting and General Services (DAGS); the Department of Education (DOE); and the Department of Transportation (DOT).

The key figure in this process is the facilitator who is employed to coordinate the efforts of the FACD. His duties involve maintaining a strict schedule and making sure that everyone performs his or her responsibilities to the project. The FACD method involves several stages. The first consists of a Pre-FACD period involving basic organization, scheduling, and research in preparation for the FACD session. Approximately two to three weeks are provided for the task.

The second stage is the actual FACD session that relies on the total commitment of its participants to realize effective and successful results. During this concentrated effort of approximately two weeks, a dedicated work area is established. All information pertaining to the project is kept in this work area. Schedules, plans, drawings, information, assigned tasks, etc. are all posted on the walls to provide design team members with instant access to all project data. Only work pertaining to the project is conducted within the workspace. The last day of the FACD session produces a study and a partnering agreement to be signed by participants.

The final stage is a post-FACD period addressing any changes or final comments needing to be appended to the FACD document. This period might last for one to two weeks and is usually concerned with ensuring that sufficient copies of the study have been reproduced and generated to the appropriate concerns.

4.63 Charette

A charette is similar in concept to an FACD but is not quite as intense. There are a series of user meetings conducted to establish functions and program requirements. Concept designs and sketches are developed to convey design solutions. Unit pricing of the design solutions is normally applied to establish whether the project will be within the programmed amount. The charette is normally conducted within a period of two weeks.

4.64 Design/Build

A design/build[25] approach occurs when the client contracts with a design/build entity for a project. The architect becomes a member of a design/build team providing the client with a package to design the project and construct the project. The architect is likely to be employed by the contractor. Although the architect is still in the conventional role as the prime consultant, he would be answerable to the contractor who holds the contract with the client. The architect has to work closely with the contractor to select and implement the right solution to the scope

of work. The design/build team is only a single entity, there is no separation between the design and building entities.

The architect's role may also take the form of being a venture partner sharing equally with the contractor in regard to profitability and responsibility. The rewards are greater, but there is also increased risk of liability. The architect not only maintains the role as a project designer, but also becomes a construction entity. A vehicle of insuring the architect from building defects and liability needs to be put into place. Another role might be the architect as the lead of the design/build team. This is a possibility, but rarely a probability. The architect is the one employing the design/build team members. This occurs if the architect assumes the liability for design and construction. There are certain instances where architects would also assume design/build roles for their own projects.

4.65 Performance Based Procurement System (PBPS)

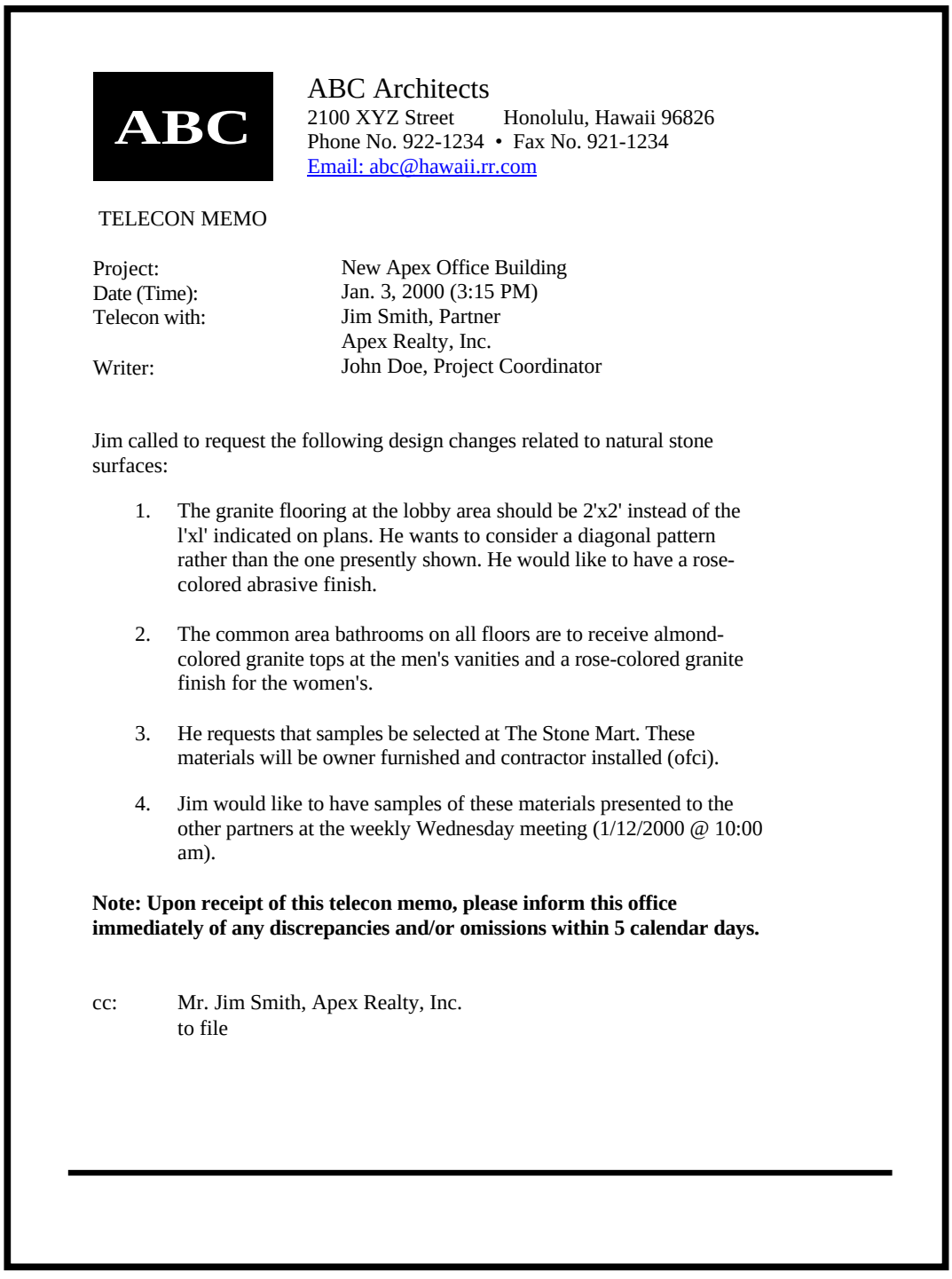
A new approach to selection of consultants, contractors and design/build teams is the Performance Based Procurement System (PBPS) developed by Dr. Dean Kashiwagi of Arizona State University (ASU). It is a selection system that was initiated through Dr. Kashiwagi's Performance Based Studies Research Group (PBSRG) at ASU's Del E. Webb School of Construction. The selection of a design consultant is made through an evaluation of past performances relating to a particular project type and/or scope of services. The architect and his design team are required to submit all pertinent data. Certain categories of criteria are established for all participants. Points are assigned to these categories based on performance. The participants are then ranked according to point totals.

In the selection of contractors and design/build teams, interested parties are requested to provide information pertaining to their qualifications. Selection is made after consideration of each participant's performance and price. Although a factor, the lowest price will not guarantee selection. A ranking system for selection is established based upon accumulation of points.

4.66 Architect/CM

An Architect/CM [23] approach occurs when the client retains the architect to provide design services as well as construction management services. The architect serves the client through the construction of the project. The architect's role also varies in several other ways. He may also decide to assume the role as contractor for the project. The architect retains various subcontractors to perform the work. He also schedules and ensures that the work is conducted properly. The architect is in total control of the project for the owner. An extended version of this role has the architect as a developer for the project. This provides one hundred percent servicing to the client.

Figure 4.1 Sample Telephone Memo



ABC

ABC Architects
2100 XYZ Street Honolulu, Hawaii 96826
Phone No. 922-1234 • Fax No. 921-1234
Email: abc@hawaii.rr.com

TELECON MEMO

Project:	New Apex Office Building
Date (Time):	Jan. 3, 2000 (3:15 PM)
Telecon with:	Jim Smith, Partner Apex Realty, Inc.
Writer:	John Doe, Project Coordinator

Jim called to request the following design changes related to natural stone surfaces:

1. The granite flooring at the lobby area should be 2'x2' instead of the l'xl' indicated on plans. He wants to consider a diagonal pattern rather than the one presently shown. He would like to have a rose-colored abrasive finish.

2. The common area bathrooms on all floors are to receive almond-colored granite tops at the men's vanities and a rose-colored granite finish for the women's.

3. He requests that samples be selected at The Stone Mart. These materials will be owner furnished and contractor installed (ofci).

4. Jim would like to have samples of these materials presented to the other partners at the weekly Wednesday meeting (1/12/2000 @ 10:00 am).

Note: Upon receipt of this telecon memo, please inform this office immediately of any discrepancies and/or omissions within 5 calendar days.

cc: Mr. Jim Smith, Apex Realty, Inc.
to file

Figure 4.2 Sample Minutes to Meeting

ABC Architects
2100 XYZ Street Honolulu, Hawaii 96826
Phone No. 922-1234 • Fax No. 921-1234
Email: abc@hawaii.rr.com

MINUTES TO MEETING

Project:	New Apex Office Building
Date (Time):	January 12, 2000 (10:00 am)
Place:	Apex Realty, Inc. Conference Room
In Attendance:	Mr. Jim Smith, Partner, Apex Realty, Inc. Mr. George Lee, Partner, Apex Realty, Inc. Ms. Arlene Scott, Project Manager, Apex Realty, Inc. Mr. Gary White, Partner, ABC Architects Mr. Jerry Logan, Project Architect, ABC Architects
Writer:	John Doe, Project Coordinator, ABC Architects

This was a weekly progress meeting pertaining to the design review for Apex Realty's New Office Building. The following items were discussed:

1. It was requested that an extra traffic lane be considered to alleviate rush-hour congestion at the north end of the site. This could be in the form of a turning lane synchronized with the existing traffic lights.

2. The landscaping at the north entry should be more colorful to draw attention to the new building. Trees should be spaced so as to not create obstruction for motorists. It was recommended that a layered planting scheme be incorporated. This would allow for low colorful plants at the sidewalks gradually increasing in height as they move back toward the property, culminating against a background of evergreens.

3. The building design still needs to utilize a glass system more in harmony with the surrounding natural environment. The glazing still needs to give off a green effect. The existing selection still has too much of a blue tint.

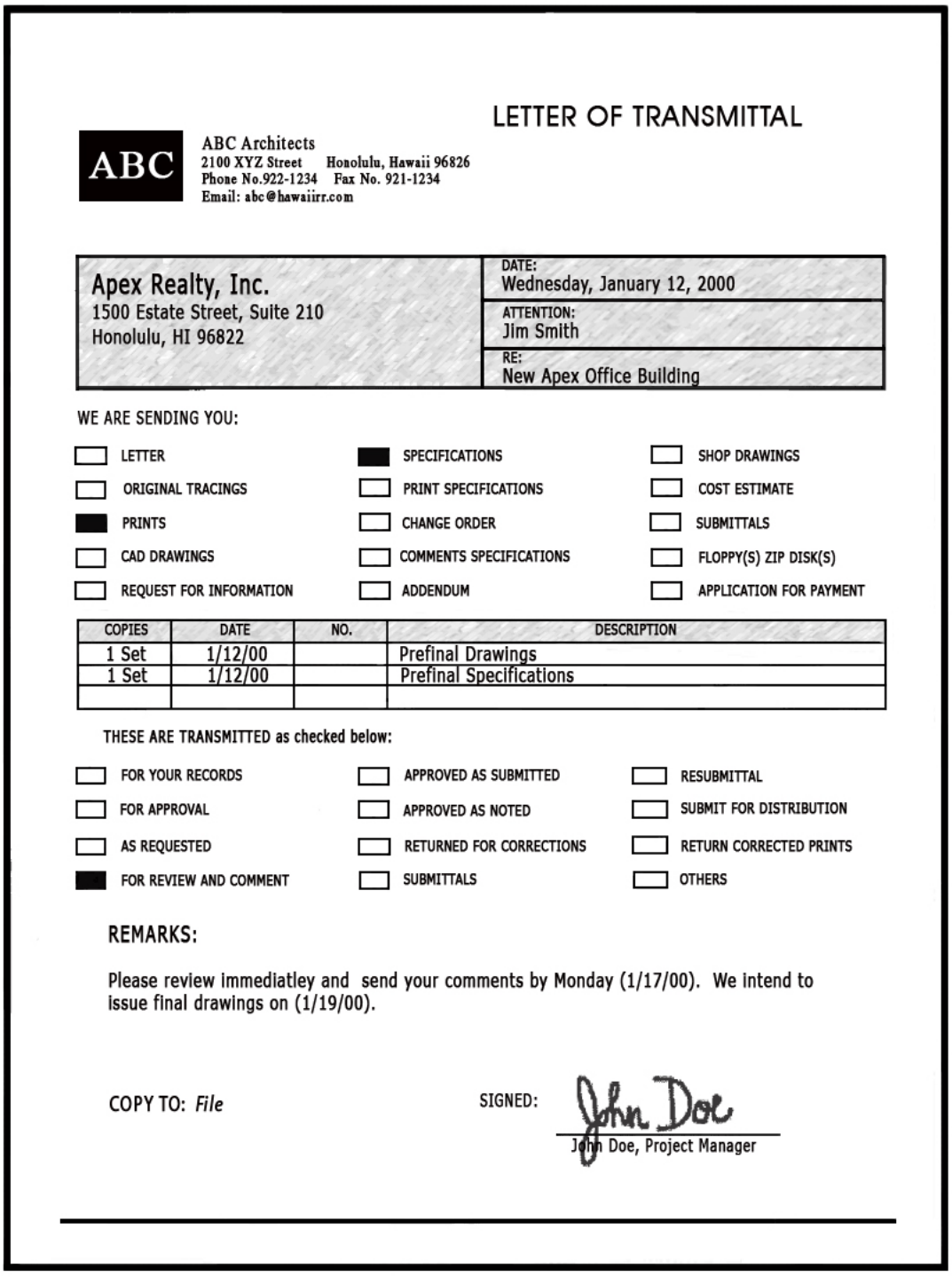
4. The signage needs to have the Apex logo larger than the building address number. This will draw immediate attention to motorists and clients who can identify and locate the building well in advance of the off ramp.

5. The granite samples for the lobby and common area restrooms were presented and approved. These will be prepared on a sample board along with the other approved selections.

6. It was agreed that ABC Architects should be retained as the building architects to review submittals from tenants. Scope of work shall include reviewing designs for compliance to building covenants as well as reviewing designs at weekly project meetings.

Note: Upon receipt of these minutes, please inform ABC Architects immediately of any discrepancies and/or omissions within 5 calendar days.

Figure 4.3 Sample Transmittal Letter



LETTER OF TRANSMITTAL

ABC

ABC Architects
2100 XYZ Street Honolulu, Hawaii 96826
Phone No.922-1234 Fax No. 921-1234
Email: abc@hawaiirr.com

Apex Realty, Inc. 1500 Estate Street, Suite 210 Honolulu, HI 96822	DATE: Wednesday, January 12, 2000 ATTENTION: Jim Smith RE: New Apex Office Building

WE ARE SENDING YOU:

☐ LETTER	■ SPECIFICATIONS	☐ SHOP DRAWINGS
☐ ORIGINAL TRACINGS	☐ PRINT SPECIFICATIONS	☐ COST ESTIMATE
■ PRINTS	☐ CHANGE ORDER	☐ SUBMITTALS
☐ CAD DRAWINGS	☐ COMMENTS SPECIFICATIONS	☐ FLOPPY(S) ZIP DISK(S)
☐ REQUEST FOR INFORMATION	☐ ADDENDUM	☐ APPLICATION FOR PAYMENT

COPIES	DATE	NO.	DESCRIPTION
1 Set	1/12/00		Prefinal Drawings
1 Set	1/12/00		Prefinal Specifications

THESE ARE TRANSMITTED as checked below:

☐ FOR YOUR RECORDS	☐ APPROVED AS SUBMITTED	☐ RESUBMITTAL
☐ FOR APPROVAL	☐ APPROVED AS NOTED	☐ SUBMIT FOR DISTRIBUTION
☐ AS REQUESTED	☐ RETURNED FOR CORRECTIONS	☐ RETURN CORRECTED PRINTS
■ FOR REVIEW AND COMMENT	☐ SUBMITTALS	☐ OTHERS

REMARKS:

Please review immediatley and send your comments by Monday (1/17/00). We intend to issue final drawings on (1/19/00).

COPY TO: *File*

SIGNED: John Doe
John Doe, Project Manager

5 ARCHITECTURAL CONTRACT DRAWINGS

5.1 CHAPTER PURPOSE

The purpose of this chapter is to provide the intern architect with an understanding of architectural contract drawings prior to his or her ascent into the professional workplace. The intern architect's development in the design aspect of the professional curriculum would be further enhanced by understanding how and why the components of this particular process are applied. If the designer has a strong understanding of contract or construction drawings, there is a smoother transition in adapting design drawings immediately into working drawings. If organized in advance, the design drawings could be converted into working drawings. It should be noted that the preceding use of “contract”, “construction”, and working drawings are synonymous.

Note: All figures described or referenced are located at the end of the chapter.

Through my own experiences as an intern architect and as a practicing architect, I have recognized the importance of being able to perform in some capacity in the development of sets of drawings to be utilized for bidding or pricing. I would venture to say that an accumulation of such knowledge should assist the intern architect in gaining favorable employment. In smaller firms, employers would be pleased to find someone who has not only grasped the design aspect but also has an understanding of the technical aspect.

In most large architectural firms, the number of intern architects assigned to a design department might number one or two out of ten. The balance would be assigned to the production department with a few being assimilated in other areas like planning, marketing, or construction. I have seen many intern architects who were disappointed with not being selected as designers. This setback was replaced through a realization that that they were learning a different and special skill. Contributing to the project by creating these technical documents seemed to give satisfaction to many intern architects who realized the importance of their new role in project development.

Although the method of producing contract drawings has since changed from mechanical hand drafting to computer aided drafting (CAD), and the bid documents may now be presented in CD-Rom and placed on the Internet (currently employed on large Navy projects/Pacific Division); the basic standards and components of the documents have remained the same. There is still the need for the intern architect to be familiar with the process of developing architectural construction drawings. The purpose of the presentation in this chapter is to provide one with a basic understanding of the process. It is in no way intended to provide the intern architect with a total understanding of construction drawings and their development processes. One will need to supplement further development through additional studying through assimilation in the workplace.

5.2 PURPOSE OF CONTRACT DRAWINGS

The purpose or intent of the contract drawings is to develop a set of documents that can be utilized for securing bids from interested and qualified contractors and to provide accurate information for construction. The documents allow the contractors to bid fairly utilizing a common, consistent set of drawings. In essence, evaluation of the bids should be likened to comparing apples to apples in lieu of allowing everyone to formulate their own scopes of work.

In the development of such documents, the architect's responsibility includes compiling all the disciplines' drawings to create a comprehensive set for the project. The architect's responsibility requires careful review of the consultants' efforts to ensure compliance to the work scope and to the design intent. By training, the architect's role is to know enough of each discipline to allow for communication and coordination of the project.

One's architectural college education provides one with the nucleus of the professional knowledge. It is then up to the individual as to how far he or she wishes to develop and to what level. The intern architect needs to learn through experience and from the engineers, contractors, material suppliers, and experienced clients (e.g. government agencies, hotels, large corporations, etc.). Because of the profession's general education background, architects are usually selected to administer multi-disciplined projects.

5.3 PHASES

There are many phases associated with the development of contract drawings. These phases ensure review and compliance with a required program and scope of work. The following are the AIA phases as identified in the AIA Document B151-1997 Abbreviated Standard Form of Agreement Between Owner and Architect:

Schematic Design Phase
Design Development Phase
Construction Document Phase
Bidding or Negotiation Phase
Construction Phase

There are many differing variations pertaining to phases employed by different elements of governmental agencies. To illustrate the requirements pertaining to consultant services, the following chapter from *Policies and Procedures Governing Design Consultant Contracts*, November 1981 [26] has been added for one's review and reference. This publication was developed by the State of Hawaii's Division of Public Works to establish criteria and standards for its projects.

Intern architects need to be aware of the different design phases of a project. It is also helpful to understand the extent of the work as well as the drawings required to fulfill those phases. There are five defined phases of the design stage according to the *Policies and Procedures Governing Design Consultant Contracts* (November 1981) [26] developed by the State of Hawaii's Division of Public Works (Department of Accounting and General Services). These are the Schematic Design

Phase, Preliminary Design Phase, Final Design Phase, Bidding Phase, and the Construction Phase. The following excerpt from that document describes the efforts required of the architect and design team members in fulfilling their responsibilities:

SCOPE OF CONSULTANT SERVICES

A. GENERAL

The total evolution of a physical facility for a Division of Public Works project from the conceptual stage to occupancy may require the following stages:

1. Preparation of a Project Development Report.

2. Development of a Complex Development Report.

3. Design (Basic Services).

B. SCOPE FOR VARIOUS STAGES

1. PROJECT DEVELOPMENT REPORT (PDR) STAGE

   a. Project Development Reports are prepared to give inputs to Consultants for 1) Designing a building or 2) Preparing a Complex Development Report (CDR).

   b. The SCOPE of a PDR may vary; however, it will generally include one or more of the following items:

      (1) Brief justification of the Project in terms of the present and future operation.

      (2) Space requirements and design criteria required as input for a Consultant in designing a building or developing a CDR.

      (3) Project Cost Estimate

2. COMPLEX DEVELOPMENT REPORT (CDR) STAGE

   a. Complex Development Reports (CDR) are prepared to develop a functional and aesthetically acceptable ultimate site plan for a group of buildings located within a specified geographical boundary (Complex).

   b. The SCOPE of a CDR requires several alternative Ultimate Site Plans based on siting criteria of buildings. The CDR will also include the following:

(1) Ultimate grading, water, sewer, drainage, electrical and communication plans for the complex.

(2) Incremental development plans.

(3) Cost Estimates for budgeting purposes.

3. DESIGN (BASIC SERVICES) STAGE

a. The complete scope of services to be rendered by the Consultant under the DESIGN STAGE shall include the design of the building(s) and/or other structures and improvements including utilities and other related work within the designated project site which meets the FUNCTIONAL REQUIREMENTS of the User Agency and shall also include in addition to the detailed scope, the following:

(1) Reducing FIRST COST without sacrificing long-term MAINTENANCE COST.

(2) Application of the latest techniques in ENERGY CONSERVATION.

(3) Providing for the accessibility and utilization of the facility by the HANDICAPPED.

(4) Consideration for, and respect of the surrounding ENVIRONMENT.

b. The DESIGN STAGE shall consist of the following five(5) phases:

(1) PHASE I - Schematic Design Phase

(2) PHASE II - Preliminary Design Phase

(3) PHASE III - Final Design Phase

(4) PHASE IV - Bidding Phase

(5) PHASE V - Construction Phase

C. DETAILED SCOPE FOR DESIGN STAGE

1. PHASE I — SCHEMATICS DESIGN PHASE (Schematics)

a. After executing the Consultant Services Contract or

upon receipt of written Notice to Proceed, the Consultant shall develop the schematic concept data presented in the Building Program or Educational Program Specifications.

b. OBJECTIVES

(1) To provide a diagrammatic statement of the building program illustrating the program requirements such as number and size of rooms and their functional relationships.

(2) To investigate possible solutions at minimum design expense. 1/

c. PRESENTATION REQUIREMENTS (in writing, drawings, or models as applicable) must include:

(1) Functional justification of design

- Relationship diagrams showing the relationship of major program areas and site elements and relationship of spaces within the major program areas.

- Circulation diagrams showing the movement and activities of visitors and staff including the physically handicapped, the movement systems of material and supplies, and vehicular circulation.

(2) Site Plan at a scale of 1" 40 - 0" showing: 1/ The consultant may prepare "pre-schematic" plans consisting of single-line freehand sketches.

- Existing contours, landscaping features, roads, sidewalks, drainage patterns, utility lines, together with proposed roads, sidewalks, parking areas, etc.

- Relationship and distances of proposed buildings to existing buildings and adjacent property lines, easement lines and setback lines.

(3) Floor Plans of each building at a minimum scale of 1/8" = — 0", showing all required proper sizes in proper relationship to each other including all lanais, stairs, toilets with toilet stalls.

(4) Exterior Elevation of each building at minimum scale of 1/8" = 1'/O". Indicate finish materials. Show finish and existing grade lines.

(5) Typical Cross Sections at minimum scale of 1/8" = — 0" showing structural framing method. Show height to the bottom of beams and ceilings and all other critical dimensions.

(6) Tabulate gross floor area of each room and show comparison with area called out in the program. (Gross floor area includes exterior walls). Area criteria shall not be exceeded under any circumstances, unless otherwise authorized in writing.

(7) Sketches and description which will indicate the structural, air-conditioning, lighting, energy consumption level, hot water heating systems which will indicate the special characteristics of the selected systems together with an economic analysis which determined the choice of such system.

(8) Preliminary statement of probable construction costs computed on the basis of unit square foot cost and type of area.

d. PRESENTATION MEETING

At the end of the Schematic Design Phase, the DPW will schedule a meeting, at which the Consultant will personally present the report.

e. SUBMITTALS

7 sets of prints of all drawings.

4 sets of cost estimates based on unit square foot cost. 2 sets

or copies of other required documents.

All previously marked-up check drawings.

f. APPROVALS

The Consultant shall not proceed into the Preliminary Design Stage without written approval of the Schematic Design Solution.

2. PHASE II — PRELIMINARY DESIGN PHASE (Preliminary Plans, Specifications & Estimates)

a. After the approval of the Schematic Design Stage, the Consultant shall complete the Preliminary Design Stage by further refinement of the concept, the selected building

systems, the circulation patterns, site relationships and building program areas.

b. OBJECTIVE: To fix and illustrate the size and character of the entire project in all its essentials.

c. PRESENTATION REQUIREMENT shall include:

(1) Site plan (scale 1" = 40' — 0"). Show locations of bench mark and its elevation, show each building by dimension, existing and finished contours, ground floor elevations, location and extent of roads, walks, parking areas, utilities (existing, new and relocated), site construction and limits of the contract. (DPW must be advised of proposed interruptions to services, roads, etc., caused by new construction.)

The site plan shall also show the storm drainage system, all property lines, street and utility easements and all azimuths and distances delineating these easements.

(2) Landscape plan (1" = 40' — 0"). Show general type and location of landscape elements and all above-grade site construction including retaining walls, steps, lighting, walks, roads, flagpoles and building signs and all necessary details. This plan shall also show all existing trees.

(3) Floor plans or each building drawn with double lines to indicate thickness of wall at minimum scale of 1/8" = 1' — 0". (1/4" = 1' — 0" if it fits within the single sheet) shall show the following:

- Complete roof finish schedule.
- All fixed and movable casework, equipment, fixtures as well as the location of mechanical equipment and electric panel boards.
- Floor drains, hose bibs in toilets and kitchens as well as all exterior bibs and all downspouts.
- Tabulation of gross floor areas reflecting the latest revisions.
- For Federal-Aid projects, a summary of gross floor areas of each building broken down to assignable and non-assignable areas shall be shown on each floor plan sheet. The gross floor areas shall not exceed those approved by the Federal government.

(4) Detail Room Layouts of each typical room and all special rooms at scale of 'A" = — 0" showing all movable casework, equipment, fixtures, and all furniture. These floor plans are not required if the floor plans under (3) are ready at 'A" = — 0". (N.I.C..furniture shall be shown with dotted lines.

(5) Exterior elevations at minimum scale of 1/8" = 1' — 0". Indicate construction materials, finish and existing grade lines.

(6) Longitudinal and Transverse Sections at a scale of 1/8" = — 0". Indicate structural members including foundations, materials, general dimensions; general dimensions including floor heights, finish materials and existing and finish grade lines.

(7) Outline specifications:

- Finishes on exterior and interior
- Fenestrations
- Construction materials
- Structural, mechanical and electrical systems and design data
- Signal, communications and auxiliary systems
- Other items as appropriate and directed

(8) Single line diagrams of mechanical and electrical distribution systems. Use explanatory sections and cutaway sketches as required. Indicate location of A/C zones and thermostats.

(9) Economic analysis of the use of alternate energy sources such as solar hating for hot water, heat recovery, etc.

(10) The most economical offsite utility service connection requirements shall be established. Location and size of transformer vault and switch room requirements shall also be established if applicable.

(11) Tabulation of lighting intensity for all rooms and task areas and location of switches.

(12) Indicate areas where special acoustical treatment will be required to reduce noise level transmission.

(13) Construction cost estimate in approved format. (See

Chapter II.)

(14) Energy budget calculations where required.

(15) Furniture list shall be prepared by the Consultant showing position and non-position related furniture for each room. In addition a summary tabulation by each individual type and size of furniture shall also be prepared.

d. PRESENTATION MEETING

The DPW will schedule a meeting in which the Consultant will make his preliminary Design Phase Presentation Report and explanation in person. (NOT MANDATORY FOR ALL PROJECT.)

e. SUBMITTALS

5 sets of prints of all drawings
5 sets of Outline Specifications
5 sets of Preliminary Cost Estimates
5 sets of Furniture List
All previously marked-up check prints

f. APPROVALS

The Consultant shall not proceed into the Final Design Phase without approval in writing from the **DPW** of his preliminary Design Phase.

3. PHASE III — FINAL DESIGN PHASE (Final Plans, Specifications and Estimates)

a. **GENERAL** REQUIREMENTS: After the approval of the preliminary Design Phase, the Consultant shall prepare his Final Design documents based on these approved preliminary drawings in a form suitable for public bidding.

b. OBJECTIVES: In preparing the Final Bid Documents (plans, specifications and estimate), the Consultant shall take proper care to assure the following:

(1) That all phases of the construction work are fully shown and/or described so that the intent is understood by all concerned, thereby eliminating change orders during construction.

(2) The use of sound construction practices utilizing methods, equipment and materials of proper dependability and durability with economy in operation and maintenance.

c. FINAL CONTRACT DOCUMENTS: For detailed minimum requirements for the Final plans, specifications

and estimate, see Chapter VI. **This information has been included as Appendix C.**

d. APPROVAL SIGNATURES: Signatures of approval shall be obtained on the appropriate tracings as required prior to final review, except for those on the Title Sheet which shall be obtained prior to the final submittal.

e. SUBMITTALS FOR FINAL REVIEW:

9 sets of prints of all drawings
8 sets of typewritten specifications
4 sets of final cost estimates
2 sets of each of the following engineer calculations:

(1) Civil (water, sewer and storm drain)

(2) Structural

(3) Electrical (show calculations on electrical plan)

(4) Fire hose cabinet, wet stand pipe and fire hydrant (show calculations on electrical plans)

f. FINAL SUBMITTAL: The final submittal shall be made only after all comments on the final review have been incorporated in the final tracings and specification originals.

All tracings of drawings with all required approval signatures.

All originals for specifications

1 set of prints of all drawings incorporating all revisions

1 set of specifications incorporating all revisions

1 set of final cost estimates1 set of all calculations

All previously marked-up documents

4. PHASE IV — BIDDING PHASE

a. REQUIRED SERVICES — The Consultant shall be responsible for and provide the following services under this Stage:

(1) Perform all work necessary for obtaining the building permit prior to bid opening.

(2) Make his own arrangements to pick up bidding plans and specifications for his use, as well as for his sub-consultants.

(3) Review and make recommendations as to acceptability and conformance to specifications for all requests for material substitution.

- Pick up and return substitution request to appropriate DPW office.
- All disapprovals shall be accompanied with specific reasons for such disapprovals.

(4) Prepare all addenda, including all drawings and specifications that may be required due to omissions, clarifications and revisions.

- Addenda shall be prepared on acceptable bond paper ready for printing.
- Specification originals and tracings for addenda shall be submitted to DPW no later than ten (10) calendar days before the bid opening date.
- No Tradenames of products shall be used in any addenda for the purpose of adding new products.
- Include ALL APPROVED SUBSTITUTIONS on the last addendum.

(5) Analysis of bids when all bid exceed project budget.

b. SERVICES NOT INCLUDED — The following work will be the responsibility of the Division of Public Works:

(1) Reproduction and distribution of bidding documents and addenda.

(2) Calling for/receiving/and opening of sealed bids

(3) Awarding of bids to successful bidder.

5. PHASE V — CONSTRUCTION PHASE

a. GENERAL: The actual field inspection of the construction of a project will be administered by staff Inspectors and Engineers of the Division of Public Works.

The Consultant's services shall not include any continuous personal inspection of the actual construction.

b. CONSULTANT'S SERVICE TO BE PERFORMED:

Consultation and advisory services to be performed by the

Consultant shall include the following:

(1) Provide proper interpretation of plans and specifications.

(2) Provide proper color schemes and surface finishes for all interior and exterior surfaces of buildings and structures.

(3) Review and provide recommendations for rejection or acceptance of all shop drawings, samples, brochures and other submittals during construction.

- Make own arrangements to pick up and return all shop drawings, samples, etc. from DPW.

(4) Provide clarification or detail drawings of any special complicated features of construction that are not adequately shown on the plans.

- Drawings shall be prepared on mylar or tracing cloth 24" x 36".

(5) Provide Post Contract Drawings and detail cost estimates whenever required to correct conflicts, omissions, errors or field changes.

- Drawings shall be prepared on mylar or tracing cloth 24" x 36".

(6) Analyze contractor's cost proposals for changes.

(7) All services (1) through (6) above shall be performed expeditiously to prevent costly construction delays; in any case, all required
actions shall be performed within 10 working days.

(8) Visit the actual project site whenever such visitation is necessary to adequately perform the consultation and advisory services under this stage.

(9) Participate in pre-construction conference.

(10) Attend pre-final and final inspections called by DPW and prepare punch list of all defects, etc.

There are many other interpretations by other government agencies or by industry standards. The Department of the Navy, for example, utilizes its *PACNAVFACENGCOM P-74 A-E Guide* (Pacific Naval Facility Engineering Command P-74 Architect-Engineer Guide) [24] for establishing standards for architect and engineering firms performing services for its projects. Its phases in the preparation of contract drawings on most projects consist of the Concept

Submittal, 60% Submittal, 100% Submittal and a Final Submittal. The percentages relate to the drawings' percent of completion.

There are instances when references are made to a 100% or Pre-final Submittal. At these submittals, the drawings should be considered to be complete with no other work to be performed by the design team. Many times, misconceptions are that "those items can be caught on the Final (submittal)". Not so! The documents should be complete. The only actions implemented for the Final should be changes requested by the client and any comments or corrections required by the approving agencies. Keeping this in mind will hopefully remind the intern architect of the importance and need to maintain a strict schedule.

5.4 PRODUCTION STANDARDS

When one is involved in producing contract drawings, it becomes necessary to refer to a standard or manual that will help one in understanding how to perform the required work. One of these documents is the *Guide To Production Procedures* [27] developed by the Honolulu Chapter of the American Institute of Architects. Initially developed in 1981 and updated in 1990, it addresses many of the items required to develop a successful set of contract drawings or blueprints (as they were formerly referred to):

Terminology
Abbreviations
Symbols
Material Indications
Lettering and Line Weight
Dimensioning
Notation Shortcuts & Keynoting Sheet Design
Drawing Numbering Systems Partitions
Room Finish Schedule
Color Schedule
Door Schedule
Window & Louver Types
Typical Mounting Heights

This document has been attached as **Appendix A**. It has proven to be a very useful reference in the development of many intern architects and architects in Hawaii. The intern architect should embrace any production or operations manual prepared by the firm he or she becomes associated with.

When I started at Gruen Associates in 1977, they provided me with a copy of their Architectural Production Manual. I relied heavily on that document in performing my duties. It was a document the entire production department followed to produce well-coordinated sets of drawings for the firm's projects. I believe that my familiarity with and constant application of that document were responsible for developing my skills and knowledge in the successful production of contract drawings. I used that document as a personal *reference for many years.*

An additional reference that will provide the intern architect with some "how to" information is *The Professional Practice of Architectural Working Drawings* [28] written by Osamu A. Wakita and Richard M. Linde, A.I.A. Architect.

5.5 PLAN READING

Intern architects need to be proficient in reading contract documents. The ability to read plans indicates that one is able to visualize the sequence of putting a project together. Developing an understanding of the composition of a set of contract drawings will allow for an easier transition from the studio into the architectural office.

In 1997 the State Public Works Engineer had determined that there was a need to ensure that the State of Hawaii's building construction inspectors were proficient in plan reading. It was determined that informational or refresher seminars would be helpful. I was one of eight professionals invited to provide a presentation for our respective disciplines. I had been invited because it was felt that my familiarity with construction would allow me to provide insights from an architect's and from a builder's perspective. I had determined that simplifying the task would be the best approach for my presentation.

I have often seen many students and intern architects overwhelmed by large sets of drawings. They were not as intimidated once they had established a basic understanding of how those sets were composed. This understanding allowed them to adjust easily to their role as intern architects.

5.6 DRAWINGS

Drawings are normally set up in a certain sequence to allow for a systematic chain of development. The common method or system relating to the preparation of the documents relies upon presenting general information and then going into specifics. This is basic for any complete document. It is similar to reading a book. If one only skims through it, one will not know the whole story. There is always that need to start from the beginning. This is the same when reading plans. The basic process is usually the same, however, firms and agencies may differ a little on their standards.

Much of the information provided reflects the standards employed within our office. Our standards have been developed over a period of time and have been tailored to meet the needs of our operation.

If the intern architect looks at a set of contract drawings, one would see the following composition:

Title Sheets

Chapter 1. Plans
- Site Plan
- Floor Plan
- Reflected Ceiling Plan

Roof Plan
Detail Plans
Floor Plan
Ceiling Plan
Roof Plan

Chapter 2. Exterior Building Elevations

Chapter 3. Sections
Building Sections
Wall Sections
Detail Sections

Chapter 4. Interior Elevations

Chapter 5. Schedules
Finish Schedules
Door Schedules
Window Schedule
Door Types
Window Types
Door Details
Window Details

Chapter 6. Other Details

Many firms set up their drawings in several formats. The simplest way would be to utilize consecutive sheet numbers. The numbering would be T-1, A-1, A-2, A3, A-4, A-5 ... and so forth. In many cases during design development, as the contract drawings become more detailed and complete for subsequent submittals, additional sheets are added. This poses a problem in terms of having to re-key sheets and references for each new submittal for each new phase as these sheets are added. In order to resolve this problem, a new numbering system has been developed. Some firms have adopted the AIA's *Guide To Production Procedures*[22] approach, with some modification, for certain projects.

A sheet numbering sequence is always meant to present the documents in a logical manner. Two other formats pertaining to sheet numbering may be utilized. A recurring consideration would take into account the size of the project. For smaller projects the numbering system might be:

T-1, T-2, T-3
A-1.1, A-1.2, A-1.3
A-2.1, A-2.2, A-2.3
A-3.1, A-3.2, A-3.3
A-4.1, A-4.2, A-4.3
A-5.1, A-5.2, A-5.3
A-6.1, A-6.2, A-6.3

The sheets would be keyed to chapters as previously listed above. The Title Sheets

(T) normally would not have many sheets so they are kept relatively simple. The A or Architectural Sheets would require more coordination and thought. Sheet A-2.2, for example, would refer to an architectural sheet containing information on exterior building elevations. Sheet A-5.12 would contain information pertaining to schedules.

Numbering for large projects would find the system altered to compensate for a greater number of sheets. It would be represented as:

T-1, T-2, T-3
A-1.01, A-1.02, A-1.03
A-2.01, A-2.02, A-2.03
A-3.01, A-3.02, A-3.03
A-4.01, A-4.02, A-4.03
A-5.01, A-5.02, A-5.03
A-6.01, A-6.02, A-6.03

A great deal of planning is required to create a set of contract drawings. One effective method involves the creation of a cartoon set. This is a set of drawings (sketches) which plan out the entire set in a miniature format. It may be created on 8-1/2" x 11" sheets and many times to an actual reduced scale. It depicts the entire job. It lays out every anticipated sheet, from title sheets to plans and specific details. Based on this set, the architect is able to establish the number of manhours required to complete the job. He would determine the number of hours necessary to complete each sheet of drawings during the course of the project. His effort also takes into consideration the various phases of design submittals. The architect's projection is utilized to establish the design cost for the project.

There are two basic sheet sizes utilized in the preparation of contract drawings: 24"x 36" and 30"x 42". These would normally be planned out using a modular grid system as presented in Figure 5.1[29]. The sequence of composing the sheet would normally commence from the upper left hand corner. The direction might proceed down or across the top as indicated in Figure 5.1. This would be left up to the person in charge of the project and would vary to fit each project's situation and requirements. Figure 5.2 [29] illustrates an example of a title block description while Figure 5.3 [30] displays several types of title blocks. For government projects, the architect would utilize the agency's sheets and title blocks. The firm's own title blocks would be used for private projects.

Contract drawings for a school cafetorium have been selected for further discussions on plan reading. Although a part of a larger project, the cafetorium was set up separately as its own bid package. **A number of the drawings (Title Sheets and Architectural) have been attached to the end of this chapter as Figures 5.4 to 5.27. One needs to refer to those drawings as the discussion develops.**

This project was accomplished utilizing the FACD process. As such, little change was expected. This allowed us to apply the basic sheet numbering system. We had the users and the various agencies tell us what was practical for them during the FACD sessions. Some of the input included: no flat roofs, maximum 3:12 slope

for maintenance; no trees with fruits, pods, etc. The project was approved at the end of the session and it allowed us to proceed into contract drawings with everyone's concurrence.

5.61 Title Sheet

One might notice that in Figure 5.4, the General Notes are located on the Title or T-1 Sheet. This is done to make the general notes applicable to the entire set of drawings. If the General Notes only appear on the architectural sheets, say A-1, an argument could be that the notes only pertain to the architectural drawings. One needs to protect the entire project. A second, third, or even fourth Title Sheet might need to be developed in order to have the General Notes represent the entire project and all disciplines.

The following General Notes were used for the subject project:

1. The Contractor shall carefully examine the drawings, read the specifications and all other proposed contract documents and shall visit the site prior to submittal of his bid. The Contractor shall fully inform himself prior to the submission as to all existing conditions and limitations under which the work is to be performed. He shall include in his proposal, a sum to cover all costs of all items necessary to perform the work as set forth in the proposed contract documents. No allowance shall be made to the Contractor because of lack of such examination or knowledge. The submission of a bid shall be construed as conclusive evidence that the bidder has made such an examination.

2. If any Contractor is in doubt as to the true meaning of any part of the contract documents, or finds discrepancies in, or omission from any part of the contract documents, he may submit to the State a written request for interpretation thereof.

3. All work shall be accomplished in strict accordance with all local, state and federal laws, regulations, and standards having jurisdiction over this project.

4. All materials for this project shall be new and free from any and all defects unless specified otherwise.

5. The Contractor shall be responsible for coordinating all work among the various trades as necessary to avoid conflicts and to make sure that all work is in compliance with the contract documents.

6. The Contractor shall provide and maintain a safety barricade around the project site and shall assure safety of the public at all times.

7. The Contractor shall be responsible for providing all blocking, backing, brackets, etc., as required for the proper and secured

installation of all materials and products.

8. The Contractor shall report any unsatisfactory conditions and/or discrepancies to the Engineer*. Failure to comply with this condition may result in placing any and all responsibility, liability and expense on the Contractor.

9. The Contractor shall review the project for any long lead items and provide special considerations to avoid unnecessary time delays to the completion of the project.

10. The Contractor shall notify the Engineer* immediately upon encountering any hazardous materials, etc. during the course of this project. The Contractor is not authorized to handle, test or remove such materials without specific authorization from the Engineer.

11. The Contractor shall field verify all dimensions and conditions prior to fabricating and/or ordering his materials.

12. The Contractor shall stop work & notify the Engineer* immediately upon encountering any lava tubes, caves, archaeological artifacts, etc. during the course of this project. The Contractor is not authorized to proceed with work in the area without specific authorization from the Engineer*.

13. The Contractor shall obtain and pay for all building permits fee & incidental permit fees required by various government & public utilities agencies.

14. Products specified and/or indicated by name in these drawings and/or specifications establish a design or material quality desired for this project. The products of other manufacturers are acceptable provided that they meet or exceed the material and construction requirements specified and/or herein accepted by written addendum per the General Conditions For Request For Substitution.

*Note: For this project, Engineer refers to the State Project Engineer. The State assumes the responsibility during construction.

Our firm's General Notes represent many years of development. This is as a result of our staff's project experiences with other firms as well as experiences regarding our own projects. The notes represent items of concern and/or clarity. As situations arise, it may be necessary to alter, add or delete certain notes. Some were adjusted as a result of particular incidents. General Notes should be tailored to fit each project.

Items number 1 & 2 set out the rules to the contractor during the bidding phase. He is informed that he is responsible for clarifying items prior to submitting his bid proposal. This should eliminate discrepancies after the bidding process.

The contractors and their subcontractors should review the contract documents to uncover any discrepancies or to ask for clarifications. Any requests for changes to the contract documents need to be thoroughly researched prior to approval. Design decisions are usually made early and for specific reasons, including quality or type of material or product. Changes may affect other design elements or features along the way and cause disruptions to the project. It is for that reason the architect also needs to be aware of any changes during construction.

The Index to Drawings is the fastest way to locate information in the set. Large sets of drawings may include 500 or more sheets. The most efficient way to locate information is through the Index to Drawings.

The next sheet (Figure 5.5) has data information as required by the agencies in the City of Hilo (County of Hawaii). This information was requested by this county to eliminate its having to search for the data. Most approving jurisdictions have some guidelines and required format pertaining to submittals to be made to them. One needs to inquire about those requirements as well as the procedures necessary to obtain building permits and all necessary approvals. One needs to also obtain information on the time frame for processing and obtaining approvals.

This project also included a T-3 Sheet (Figure 5.6). This T Sheet was necessary to present a phasing plan to locate the cafetorium and its project limits relative to the overall project site. Phasing notes were necessary to establish certain requirements the contractor needed to fulfill his contractual requirements.

The contractor also needed to be aware of site structures. This project also required a design of an exterior space for programs and performance as well as covered walkways for pedestrians and fire trucks.

The Phasing Plan provided for site orientation regarding direction (north arrow) as well as location of the project relative to the overall school site. It should be noted that all site plans and major floor plans should contain a north arrow for orientation purposes.

5.62 Chapter 1 Plans

1. Site Plan

The Partial Site Plan (Figure 5.7) was utilized to orient the viewer to the site structures associated with the cafetorium. From this plan, references were made to the covered walkway elements and covered program spaces in Figure 5.8.

The target marks on this plan (delineated with circles and arrows) provide references to the ensuing sheets. Figure 5.9 provides a viewing of the exterior elevations and sections of these site structures. Additional structure sections are provided in Figure 5.10.

These site structures are further defined through a system of providing more detailed information. For example, Section 4 on Figure 5.10

references Detail 4 on Figure 5.11. A review of Detail 4/A-6 (Figure 5.11) finds reference to even more detailed information.

A reference to Detail 5 of (5/A-7), Figure 5.12, provides even more detailed information pertaining to an EFS Edge Joint Detail. This sequence of events illustrates the development of information progressing from general to more specific information.

2. Floor Plan

The purpose of the Floor Plan (Figure 5.13), is to provide its viewer with a two-dimensional drawing that provides information and horizontal dimensions. There are many ways to orient the drawings onto the sheet. A preferred format might be to orient the building with its entry being at the bottom of the sheet. This provides one with a feeling of entering the building from the main entry and with a major reference point from which to proceed with further development of the contract documents.

There are some instances where orientation might be with the building's north being toward the top of the sheet or "north up" as some might say. Other floor plans might be oriented in conjunction with the overall project site plan, as the cafetorium Floor Plan for this project has been. The key to referencing all these plans to one another is through their north arrows. Further orientation referencing between the Partial Site Plan (Figure 5.7) and the Floor Plan, (Figure 5.13) would be by their grid lines and grid mark designations indicated in numbers and letters within hexagons.

A grid system usually utilizes grids set on centers of columns, faces of walls, or some other type of major building element. Grids are often times utilized to identify uniform structural elements of the project and to delineate repetitive grid spacing. The grids are normally set from left to right or top to bottom but may vary according to project conditions and circumstances. The grids are sometimes utilized for locating certain elements of the project. For example, one might wish to call attention to the restroom on the Floor Plan (Figure 5.13). This is done by directing another person to a location at B6 or grid B and Grid 6. This would be very effective for telephone conversations where participants have no visual contact with one another.

Elements indicated on floor plans are usually developed following a certain system or pattern to provide a degree of order and predictability. The basic system of the Floor Plan on (Figure 5.13) is a clockwise direction. To illustrate this, locate Door No. 1, Window No. 1, and Compressor Room 101 at Grid A2. One might notice that the numbering sequence for the doors, windows, and room numbers all progress in a clockwise direction. Two very important items on any floor plan are the North Arrow that gives one site orientation and the Interior Elevation Key that will help to orient the development of the

interior room elevations. The Interior Elevation Key is also laid out in a clockwise pattern.

Detailed Plans are enlarged plans that are capable of providing more specific information. These are keyed off the overall floor plan. For example, the Platform area on the Floor Plan (Figure 5.13) is encircled with a heavy dashed line and referenced to C/A- 19 (Partial Floor Plan C on Figure 5.21).

One should note that standard elevation, section and detail marks occur throughout the drawings for reference.

3. Reflected Ceiling Plans

The purpose of this architectural plan (Figure 5.18) is to provide a comprehensive plan of all elements involved with the ceiling construction. It provides one with information pertaining to electrical, mechanical, and architectural finishes and attachments (curtain tracks, projection screens, etc.). Details giving more specific information are referenced off this plan (e.g. Detail 9/A-16, Figure 5.20, for a roof scuttle detail).

5.63 Chapter 2 Exterior Building Elevations

The purpose of the exterior building elevations is to provide a graphic picture of the exterior of the building. Exterior building elevations are a projection of the floor plan's exterior walls and are usually developed through the incorporation of other pertinent information (e.g. roof plan, door schedule, window schedule, etc.). They are drawings that provide the added dimension of height to the widths and lengths associated with plans. The exterior elevation symbols are referenced on the Floor Plan on Figure 5.13. For example, the directional symbols A/A-9, B/A-9, C/A-9, and D/A-9 located at the building's perimeter indicate that these drawings are located on Figure 5.14.

Some dimensions, detail information, and notes are also indicated on the exterior building elevations. Most of the dimensions provided are vertical dimensions. This is normally true for any elevation-type drawings. Horizontal dimensions are usually only provided when it is not practical to provide them on plans due to lack of space or if there is a need to emphasize the importance of certain horizontal dimensions.

5.64 Chapter 3 Sections

1. Building Sections

Building sections are normally taken longitudinally or through the length of the building and/or cross or through the short dimension of the building. They are usually taken at locations that illustrate typical conditions or through locations that provide the most information. Sometimes they are taken

through the most complex or crowded portion of the building in order to allow visual clarity for the contractor.

In locating a building section on the Floor Plan (Figure 5.13), one might locate section mark A/A-10 located in a circle with a directional arrow facing in the direction of how the section would be viewed (or looking up). This would be immediately to the right of the floor plan.

Referring to Figure 5.15, the longitudinal section would be located at the top of the sheet. The section provides information taken through a variety of spaces, with differing floor, ceiling, and roof heights. Once again, primarily vertical dimensions are provided on the building section.

2. Wall Sections

Wall sections are normally keyed off of the building sections. The longitudinal section A/A-10, Figure 5.15, has its major walls emphasized with heavy dashed lines with references to 1/A-14, 2/A-14, and 3/A-14. These are delineated on Figure 5.19. The wall sections are drawn at a larger scale to provide more specific information. As was earlier explained, the drawings presented in a contract set of documents follow a certain logical progression. Details are also keyed off of the wall sections.

Details 2/A-16 and 7/A-16 can be located in Figure 5.20

5.65 Chapter 4 Interior Elevations

Interior elevations provide graphic data indicating horizontal and vertical information. The dominant dimension for the development of these drawings would be vertical heights that are not normally indicated on the floor plans. Plans provide horizontal (width and length) details and dimensions while sections and elevations provide vertical dimensions. Additional horizontal information is sometimes provided for convenience or importance on elevation or section drawings. This approach is sometimes utilized to relieve the prospect of too much information being crammed onto the floor plan. Horizontal dimensions are shown on the interior elevation drawings for A+ Office and A+ Storage, Room 104, and the Girl's Dressing Room on Figure 5.22.

The interior elevations are keyed off of the interior key on the floor plan and provide designations of A thru D to identify the wall elevations. See Figure 5.22. Added typical information is provided on Figure 5.27 regarding mounting heights for fixtures and signage.

5.66 Chapter 5 Schedules

1. Door and Window Schedules

The purpose of door and window schedules is to provide information other than what is shown on the floor plans. The Door and Window Schedules (Figure 5.23), provide pertinent information about the specific doors or windows. The Window and Door Types are also delineated on this sheet and are referenced on the schedule under Door types. The door mark or number is referenced on the drawings as a symbol of a numeral within a hexagon. The window mark or number is referenced within a diamond.

Both Door No. 1 and Window No. 1 are called out toward the top of the Floor Plan on Figure 5.13. The Schedules provide specific dimensions and references to Door and Window Details on Figure 5.24 and Figure 5.25. For example, the detail number for the jamb of Door No. 1 is called out on the schedule as 8/A-28. The window schedule also provides the detail numbers for the window head, jambs, mullion, and sill for Window No. 1. Going to Figure 5.25 locates Details 1, 2, and 3.

The sheets of drawings containing the details for the doors and windows are often located immediately after the schedule sheets. This is normally to have them close at hand to coordinate with the schedule. These details may be placed at the rear of the set, however, this would require constant turning of pages.

2. Other Schedules

Other Schedules include Room Finish and Signage Schedules for the project. These also provide information pertaining to their specific elements. A Room Finish Schedule is established on Figure 5.26. This schedule provides the finishes for each room. Locating the desired room, is best accomplished through use of the given room numbers. Information pertaining to materials for floors, bases, walls, and ceilings are indicated.

The Signage Schedule provides information relating to all the required signage for the project. This is a very important element in the operations of the facility. It is probably the only way to easily locate desired rooms throughout the building. The remarks column give reference to the mounting heights indicated as Detail 1/A-32, Figure 5.27.

5.67 Chapter 5 Other Details

1. Details

Details generated and keyed from wall sections and door and window details are often times located in close proximity to the sheets on which they were referenced (smaller scaled sections or schedules). The majority of other details would be located near the rear of the set of drawings. These might include millwork, counters or other specialty details. In any case, they should be referenced somewhere within the set.

The roof details are an example of details that may be located immediately following the Roof Plan or toward the rear of the set. In any case, understanding the plans would require familiarity with the set of drawings. It should be remembered that the best way to locate any element within the set is through use of the Index to Drawings.

The roof details are usually keyed off of the Roof Plan, Figure 5.12. Some keying for roof details also occur from the detail exterior wall sections. For example Detail 7/A-16, Figure 5.20 referenced from Wall Section 3/A-14, Figure 5.19.

Please note that the roofing details for this project were received from the roofing manufacturer. A good practice is to always account for detailing either through catalogues, manufacturer's reps, distributors, and contractors. Remember, the development of the contract set of drawings is designed to progress and provide general to specific information so that the contractor may establish price and then construct the project.

5.7 CHECKLISTS

The architect's responsibility is to be the overall coordinator for the project. The architect should ensure that there is minimal repetition to minimize efforts pertaining to any changes to the drawings. There is also a need to ensure that the sub-consultants have been working with the proper updated information. This includes verifying that their base drawings are current with that of the architectural. It is highly recommended to check all documents prior to submittals.

The following is an Architectural Redi-Check List taken from the AIA Professional Practice Manual. This information should provide the intern architect with an idea of what type of checking should be conducted by the architect:

a. Verify property line dimensions on site survey plan against architecture.

b. Verify that building is located behind setback lines.

c. Verify all concrete columns and walls against structural.

d. Verify on site plans that all existing and new work is clearly identified.

e. Verify building elevations against floor plans. Check in particular roof lines, window and door openings, and expansion joints.

f. Verify building sections against elevations and plans. Check roof lines, windows, and door locations.

g. Verify wall sections against architectural building sections and structural.

h. Verify masonry openings for windows and doors.

i. Verify expansion joints through building.

j. Verify partial floor plans against small scale floor plans.

k. Verify reflected ceiling plan against architectural floor plan to ensure no variance with rooms. Check ceiling materials against finish schedule; check light fixture layout against electrical; check ceiling diffusers/registers against mechanical; check all soffits and locations of vents.

1. Verify all room finish schedule information including room numbers, names of rooms, finishes, and ceiling heights. Look for omissions, duplications, and inconsistencies.

m. Verify all door schedule information including sizes, types, labels, etc. Look for omissions, duplications, and inconsistencies.

n. Verify all rated walls.

o. Verify that all cabinets will fit.

p. Verify dimensions.

The information provided in this chapter merely touches upon the subject of contract drawings. The intern architect has hopefully gained an understanding of the basic requirements pertaining to submittals as well as developed an understanding of how to read and prepare sets of drawings.

Figure 5.1 Marginal System for Drawing Sheet

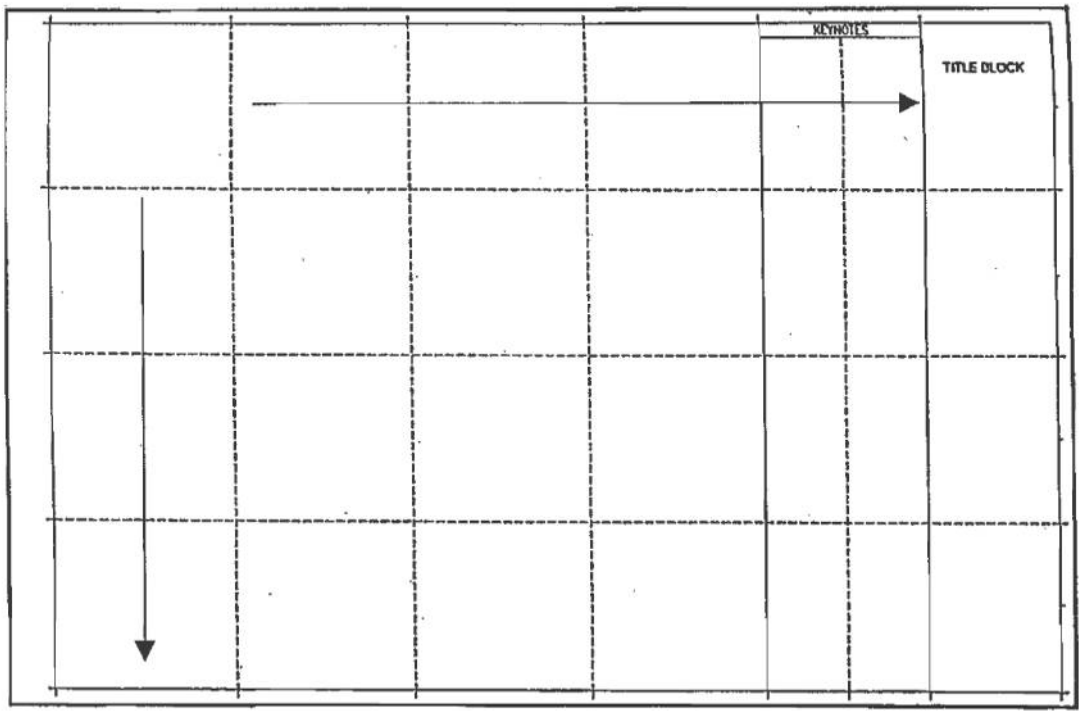


Figure 5.2 Title Block Descriptions

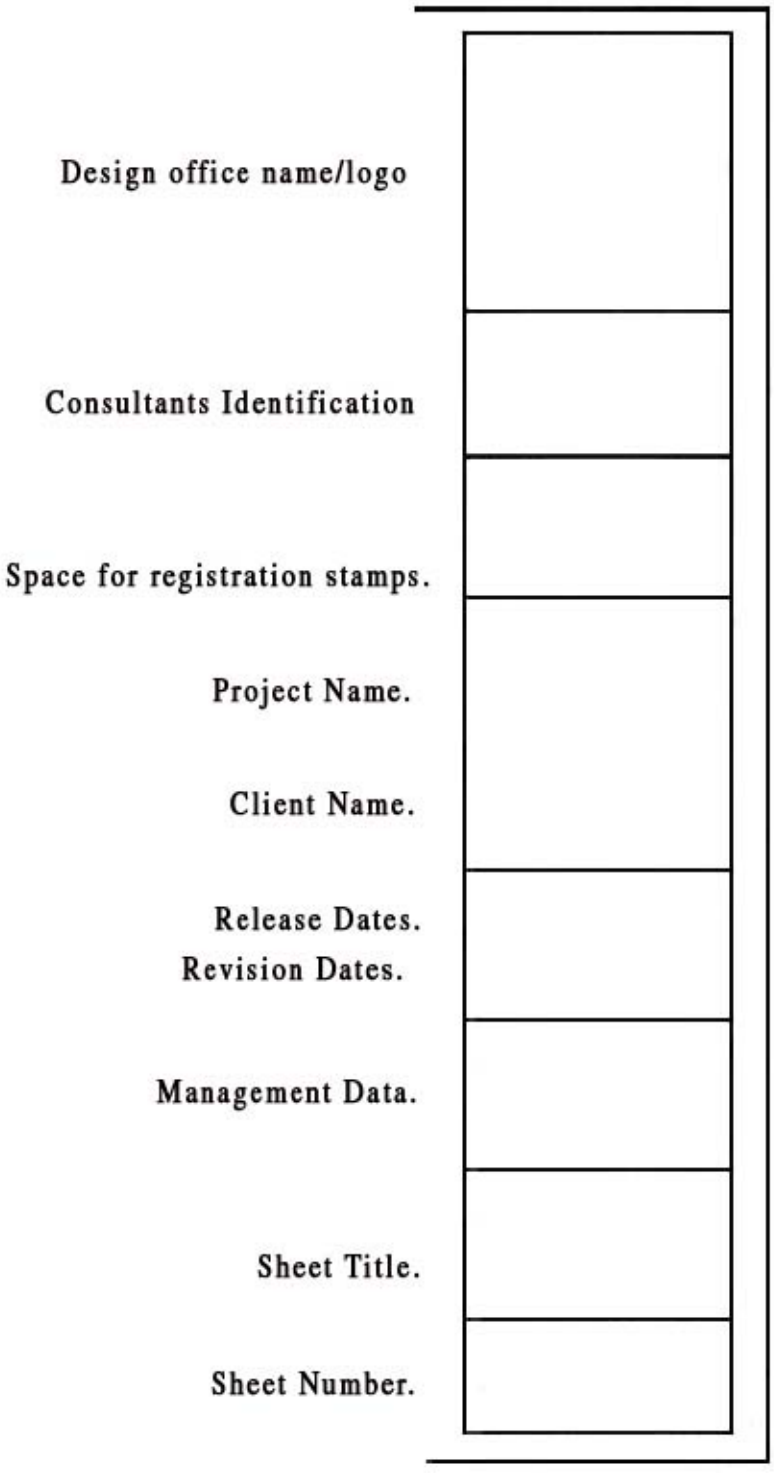
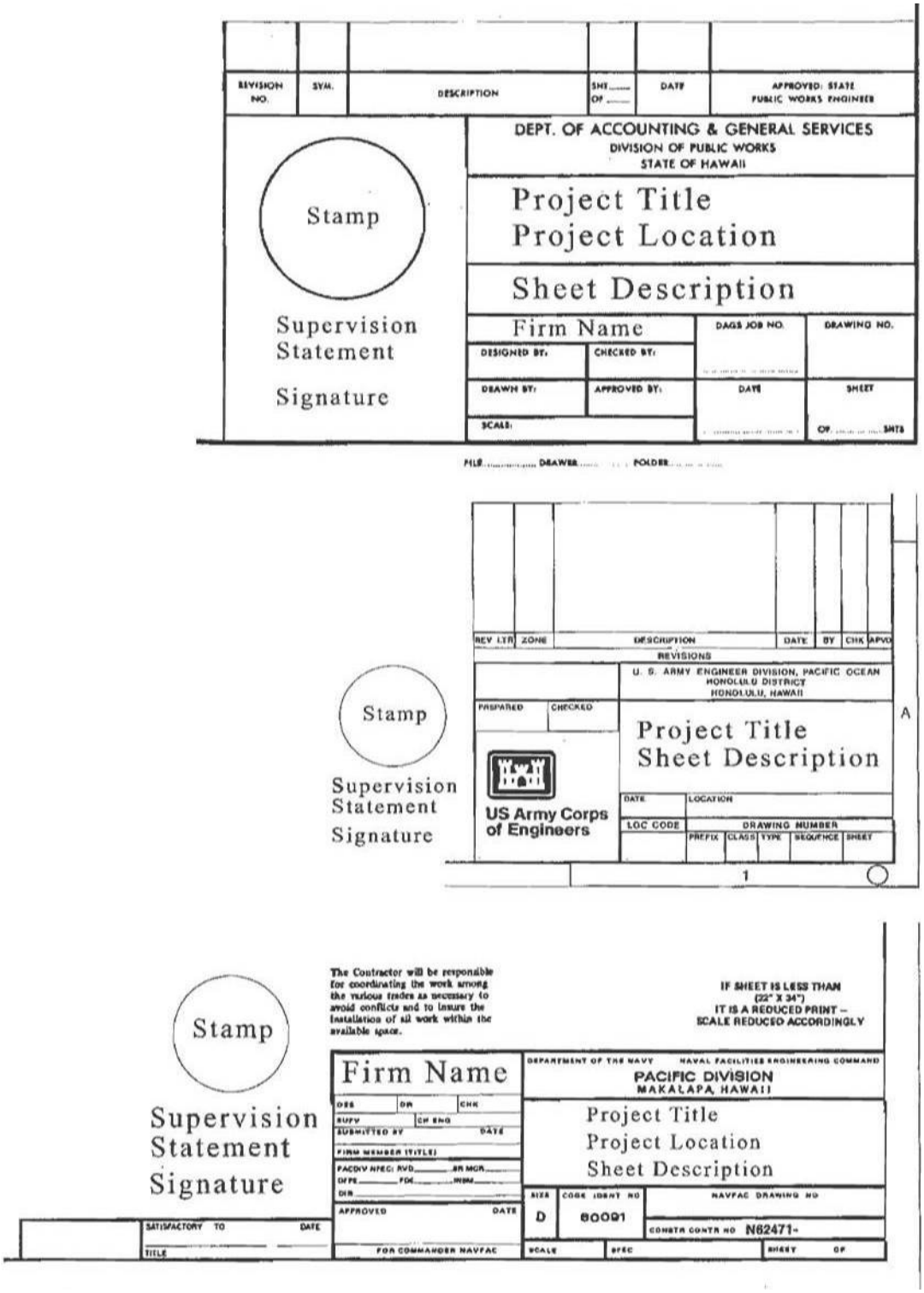


Figure 5.3 Types of Title Blocks



KEAAU ELEMENTARY SCHOOL
CAFETORIUM

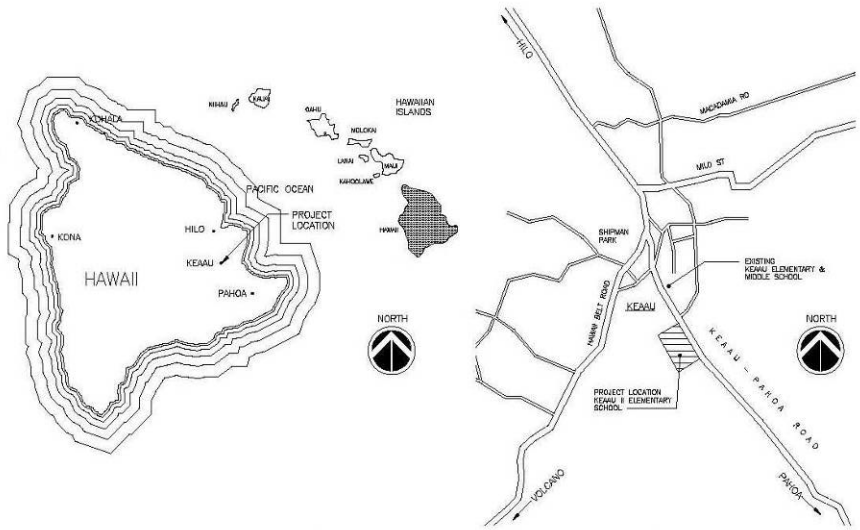
KEAAU, HAWAII, HAWAII
T.M.K. 1-6-3: 3, 15, 68
D.A.G.S. JOB NO. 11-16-1210

FOR THE
DEPARTMENT OF EDUCATION

BY THE
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
STATE OF HAWAII

ARCHITECT:	PACIFIC ARCHITECTS, INC.
CIVIL ENGINEER:	DMT CONSULTANTS ENGINEERS
STRUCTURAL ENGINEER:	MITSUNAGA & ASSOCIATES, INC.
MECHANICAL ENGINEER:	YAHIKU ASSOCIATES INC.
ELECTRICAL ENGINEER:	ITANO & ASSOCIATES, INC.
LANDSCAPE ARCHITECT:	MELVIN LAU ASSOCIATES, INC.
KITCHEN CONSULTANT:	GEORGE MATSUMOTO & ASSOCIATES
ACOUSTICAL CONSULTANT:	Y. EBISU & ASSOCIATES

VICINITY MAP & LOCATION MAP (NTS)



GENERAL NOTES

1. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE DRAWINGS, READ THE SPECIFICATIONS AND ALL OTHER PROPOSED CONTRACT DOCUMENTS AND SHALL VISIT THE SITE PRIOR TO SUBMITTAL OF HIS BID. THE CONTRACTOR SHALL FULLY INFORM HIMSELF PRIOR TO THE SUBMISSION AS TO ALL EXISTING CONDITIONS AND LIMITATIONS UNDER WHICH THE WORK IS TO BE PERFORMED. HE SHALL INCLUDE IN HIS PROPOSAL A SUM TO COVER ALL COSTS OF ALL ITEMS NECESSARY TO PERFORM THE WORK AS SET FORTH IN THE PROPOSED CONTRACT DOCUMENTS. NO ALLOWANCE SHALL BE MADE TO THE CONTRACTOR BECAUSE OF LACK OF SUCH EXAMINATION OR KNOWLEDGE. THE SUBMISSION OF A BID SHALL BE CONSTRUED AS CONCLUSIVE EVIDENCE THAT THE BIDDER HAS MADE SUCH EXAMINATION.
2. IF ANY CONTRACTOR IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE CONTRACT DOCUMENTS, OR FINDS DISCREPANCIES IN, OR OMISSION FROM ANY PART OF THE CONTRACT DOCUMENTS, HE MAY SUBMIT TO THE STATE A WRITTEN REQUEST FOR INTERPRETATION THEREOF.
3. ALL WORK SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL LAWS, REGULATIONS, AND STANDARDS HAVING JURISDICTION OVER THIS PROJECT.
4. ALL MATERIALS FOR THIS PROJECT SHALL BE NEW AND FREE FROM ANY AND ALL DEFECTS UNLESS SPECIFIED OTHERWISE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK AMONG THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO ENSURE THAT ALL WORK IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A SAFETY BARRICADE AROUND THE PROJECT SITE AND SHALL ASSURE THAT SAFETY OF THE PUBLIC AT ALL TIMES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL BLOCKING, BACKING, BRACKETS, ETC. AS REQUIRED FOR THE PROPER AND SECURED INSTALLATION OF ALL MATERIALS AND PRODUCTS.
8. THE CONTRACTOR SHALL REPORT ANY UNSATISFACTORY CONDITIONS AND/OR DISCREPANCIES TO THE ENGINEER. FAILURE TO COMPLY WITH THIS CONDITION MAY RESULT IN PLACING ANY AND ALL RESPONSIBILITY, LIABILITY AND EXPENSE TO THE CONTRACTOR.
9. THE CONTRACTOR SHALL REVIEW THE PROJECT FOR ANY LONG LEAD ITEMS AND PROVIDE SPECIAL CONSIDERATIONS TO AVOID UNNECESSARY DELAYS TO THE COMPLETION OF THE PROJECT.
10. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON ENCOUNTERING ANY HAZARDOUS MATERIALS, ETC. DURING THE COURSE OF THIS PROJECT. THE CONTRACTOR IS NOT AUTHORIZED TO HANDLE, TEST OR REMOVE SUCH MATERIALS WITHOUT SPECIFIC AUTHORIZATION FROM THE ENGINEER.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE FABRICATION AND/OR ORDERING HIS MATERIALS.
12. THE CONTRACTOR SHALL STOP WORK & NOTIFY THE ENGINEER IMMEDIATELY UPON ENCOUNTERING ANY LAVA TUBES, CAVES, ARCHAEOLOGICAL ARTIFACTS, ETC. DURING THE COURSE OF THIS PROJECT. THE CONTRACTOR IS NOT AUTHORIZED TO PROCEED WITH WORK IN THE AREA WITHOUT SPECIFIC AUTHORIZATION FROM THE ENGINEER.
13. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL BUILDING PERMITS FEES & INCIDENTAL PERMIT FEES REQUIRED BY THE VARIOUS GOVERNMENT & PUBLIC UTILITIES AGENCIES.
14. PRODUCTS SPECIFIED AND/OR INDICATED BY NAME IN THESE DRAWINGS AND/OR SPECIFICATIONS ESTABLISH A DESIGN OR MATERIAL QUALITY DESIRED FOR THIS PROJECT. THE PRODUCTS OF OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THAT THEY MEET OR EXCEED THE MATERIAL AND CONSTRUCTION REQUIREMENTS SPECIFIED AND/OR HEREIN ACCEPTED BY WRITTEN ADDENDUM PER THE GENERAL CONDITIONS FOR REQUEST FOR SUBSTITUTION.

APPROVALS

DISTRICT SUPERINTENDENT, HAWAII DISTRICT DEPARTMENT OF EDUCATION STATE OF HAWAII	DATE
COMPTROLLER DEPARTMENT OF ACCOUNTING & GENERAL SERVICES STATE OF HAWAII	DATE
STATE PUBLIC WORKS ENGINEER DEPARTMENT OF ACCOUNTING & GENERAL SERVICES STATE OF HAWAII	DATE
CHIEF, ENVIRONMENTAL PROTECTION AND HEALTH SERVICES DIVISION DEPARTMENT OF HEALTH STATE OF HAWAII	DATE

INDEX TO DRAWINGS

REVISIONS NO.	DATE	DESCRIPTION	BY	CHK	DATE	APPROVED, STATE PUBLIC WORKS ENGINEER

DWIGHT K. MITSUNAGA
LICENSED PROFESSIONAL ARCHITECT
NO. 4487
HAWAII, USA

This work was prepared by me or under my supervision and construction of this project shall be under my observation.

Signature

DEPT. OF ACCOUNTING & GENERAL SERVICES
DIVISION OF PUBLIC WORKS
STATE OF HAWAII

KEAAU II ELEMENTARY SCHOOL CAFETORIUM
KEAAU HAWAII HAWAII

TITLE, LOCATION & VICINITY MAP, APPROVALS, GENERAL NOTES

PACIFIC ARCHITECTS, INC.

DESIGNED BY:	DRAWN BY:	DRAWING JOB NO.	ELEMENTARY NO.
DMK	DKW	11-16-1210	T-1
CHECKED BY:	APPROVED BY:	DATE	SHEET
PO OTI	DKW	MAY 1987	OF
SCALE: AS SHOWN			

Figure 5.4 Sheet T-1

DATA INFORMATION

CODE INFORMATION

TMK NO:	1-6-03 : 8, 14, 11 (15.403 ACRE PORTION)
ADDRESS:	KEAAU - PAHOA ROAD KEAAU, PUNA, HAWAII
BUILDING CODE:	1991 UNIFORM BUILDING CODE (UBC) WITH 1995 COUNTY AMENDMENTS
ACCESSIBILITY CODES:	AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) CHILDREN'S DESIGN GUIDELINES
LOT AREA:	15.403 ACRES
ZONING:	AG-20
HEIGHT LIMIT:	45 FT.
LOT RESTRICTIONS:	NONE
SPECIAL MANAGEMENT AREA:	NA
FLOOD ZONE:	NO STUDY DONE
SPECIAL DISTRICT:	NA
HISTORIC SITE REGISTER:	NA
STATE LAND USE:	AG/URBAN
STREET SETBACK:	NA
DEVELOPMENT PLAN DESIGN:	PUBLIC & QUASI-PUBLIC
DEVELOPMENT PLAN AREA:	KEAAU, PUNA, HAWAII

BUILDING C- CAFETORIUM

OCCUPANCY:	B-2/A-2.1
OCCUPANCY SEPARATION:	N
TYPE OF CONSTRUCTION:	II-1hr
ALLOWABLE FLOOR AREA:	13,500 SF
ALLOWABLE AREA INCREASES:	NOT USED
ACTUAL FLOOR AREA:	12,272 SF
MAXIMUM HEIGHT OF BLDG.:	3 STORY/2 STORY; 50 FT.
ACTUAL HEIGHT OF BLDG.:	1 STORY; 31'-6"
FIRE RESISTANCE OF EXTERIOR WALLS:	1 HR. LESS THAN 10 FT.
OPENINGS IN EXTERIOR WALLS:	PROTECTED LESS THAN 10 FT.

PLUMBING FIXTURE TABULATION (CAFETORIUM)

FACILITY	WC	LAV	HDSK	SHWR	SK	HB	MS	LT	WS	FB	EWC
NEW CAFETORIUM	5	5	2	1	4	5	1	1	2	1	2

NEW FIXTURE UNIT COUNT - CAFETORIUM

WC	5	Fixtures @ 1.7	=	8.5 FU
LAV	5	Fixtures @ 0.6	=	3.0 FU
HDSINK	2	Fixtures @ 0.6	=	1.2 FU
SHOWER	1	Fixtures @ 1.6	=	1.6 FU
SINK	4	Fixtures @ 1.6	=	6.4 FU
HOSE BIBB	5	Fixtures @ 3.0	=	15.0 FU
MOP SINK	1	Fixtures @ 2.0	=	2.0 FU
LAUNDRY TRAY	1	Fixtures @ 2.0	=	2.0 FU
WASH SINK	2	Fixtures @ 1.8	=	3.6 FU
FOOT BATH	1	Fixtures @ 3.0	=	3.0 FU
EWC	2	Fixtures @ 1.0	=	2.0 FU
Total Fixture Count			=	48.3 FU

PLUMBING FIXTURE TABULATION (TOTAL CAMPUS)

FACILITY	WC	LAV	UR	SK	HB	MS	FB	EWC	SHWR	HDSK	LT	WS
NEW CAFETORIUM	5	5		4	5	1	1	2	1	2	1	2
EXIST ADMIN/LIBRARY	6	5	1	2	7	4	1	4	1			
EXIST BLDG D	20	16	4	17	14	2	4	4	2			
EXIST PLAYCOURT					1			2				
TOTAL	31	26	5	23	27	7	6	12	4	2	1	2

PARKING TABULATION

	FACILITY	PARKING
A.	NEW BUILDING C-CAFETORIUM	NA
B.	EXIST BUILDING A-ADMINISTRATION /LIBRARY	
	1. (1) COMPUTER RESOURCE CENTER	1 STALL
C.	EXIST BUILDING D-CLASSROOM BUILDING	
	1. (14) GENERAL CLASSROOMS	14 STALLS
	2. (2) SPECIAL EDUCATION CLASSROOMS	2 STALLS
	3. (1) ITERANT SERVICES	1 STALL
D.	FUTURE BUILDING E-CLASSROOM BUILDING	
	1. (14) GENERAL CLASSROOMS	14 STALLS
	2. (2) SPECIAL EDUCATION CLASSROOMS	2 STALLS
E.	FUTURE BUILDING F-CLASSROOM BUILDING	
	1. (12) GENERAL CLASSROOMS	12 STALLS
	2. (1) SPECIAL EDUCATION CLASSROOMS	1 STALLS
F.	FUTURE P-PORTABLE CLASSROOMS	
	1. (10) GENERAL CLASSROOMS	10 STALLS
	TOTAL PARKING REQUIRED	57 STALLS
	ACTUAL PARKING PROVIDED	
	PARKING A	16 STALLS
	PARKING B	18 STALLS
	PARKING C	41 STALLS
	PARKING D	25 STALLS
	TOTAL PARKING ACTUAL	100 STALLS

DEPT. OF ACCOUNTING & GENERAL SERVICES
DIVISION OF PUBLIC WORKS
STATE OF HAWAII

KEAAU II ELEMENTARY SCHOOL
CAFETORIUM

KEAAU HAWAII HAWAII

DATA INFORMATION

CLIFFORD K. MINAMI LICENSED PROFESSIONAL ARCHITECT NO. 6095 HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction of this project shall be under my observation.

Signature

PACIFIC ARCHITECTS, INC.

DNK	DNK	11-16-1210	T-2
PC ITI	DNK	MAY 1997	
AS SHOWN			

Figure 5.5 Sheet T-2

Figure 5.6 Sheet T-3

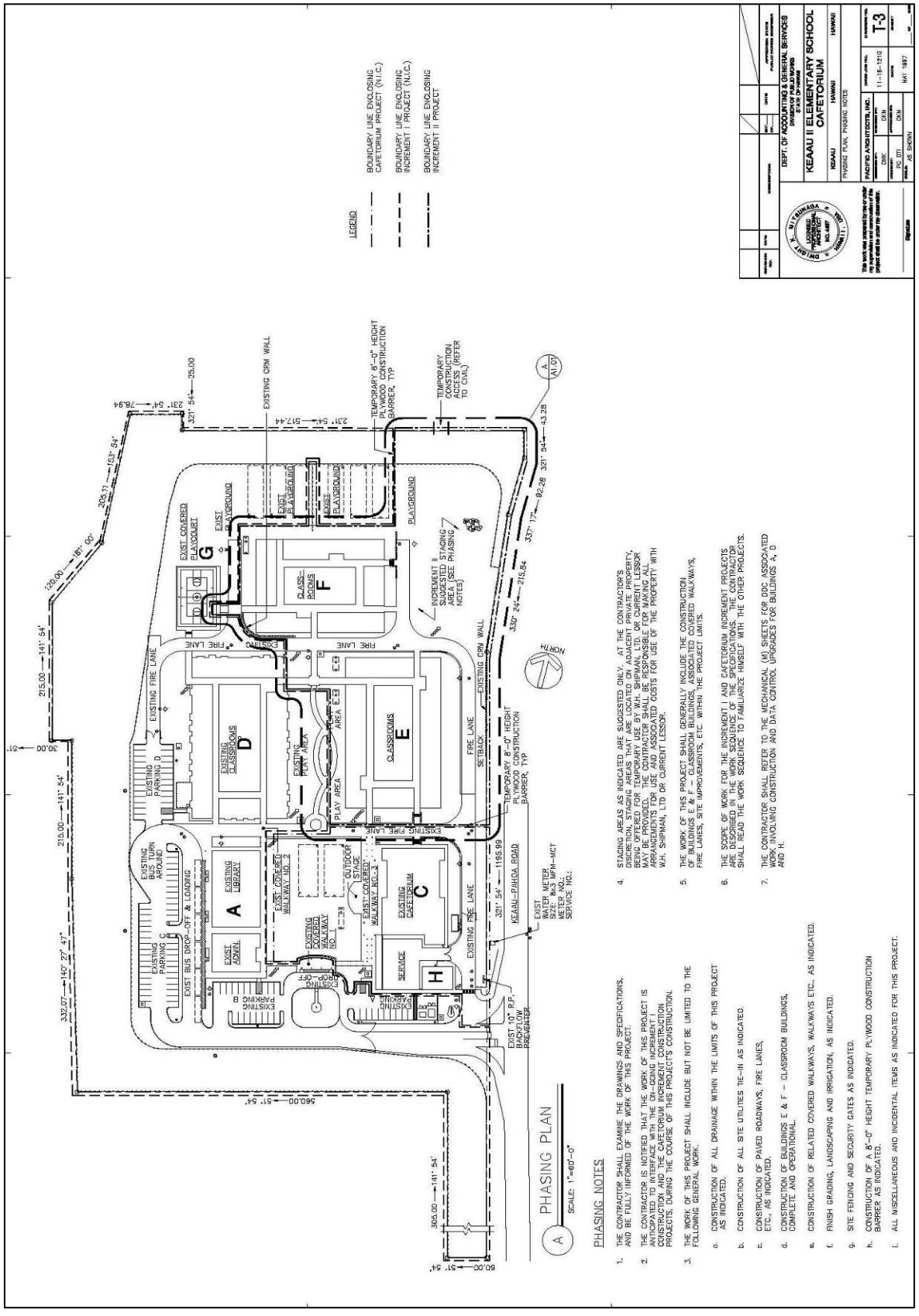
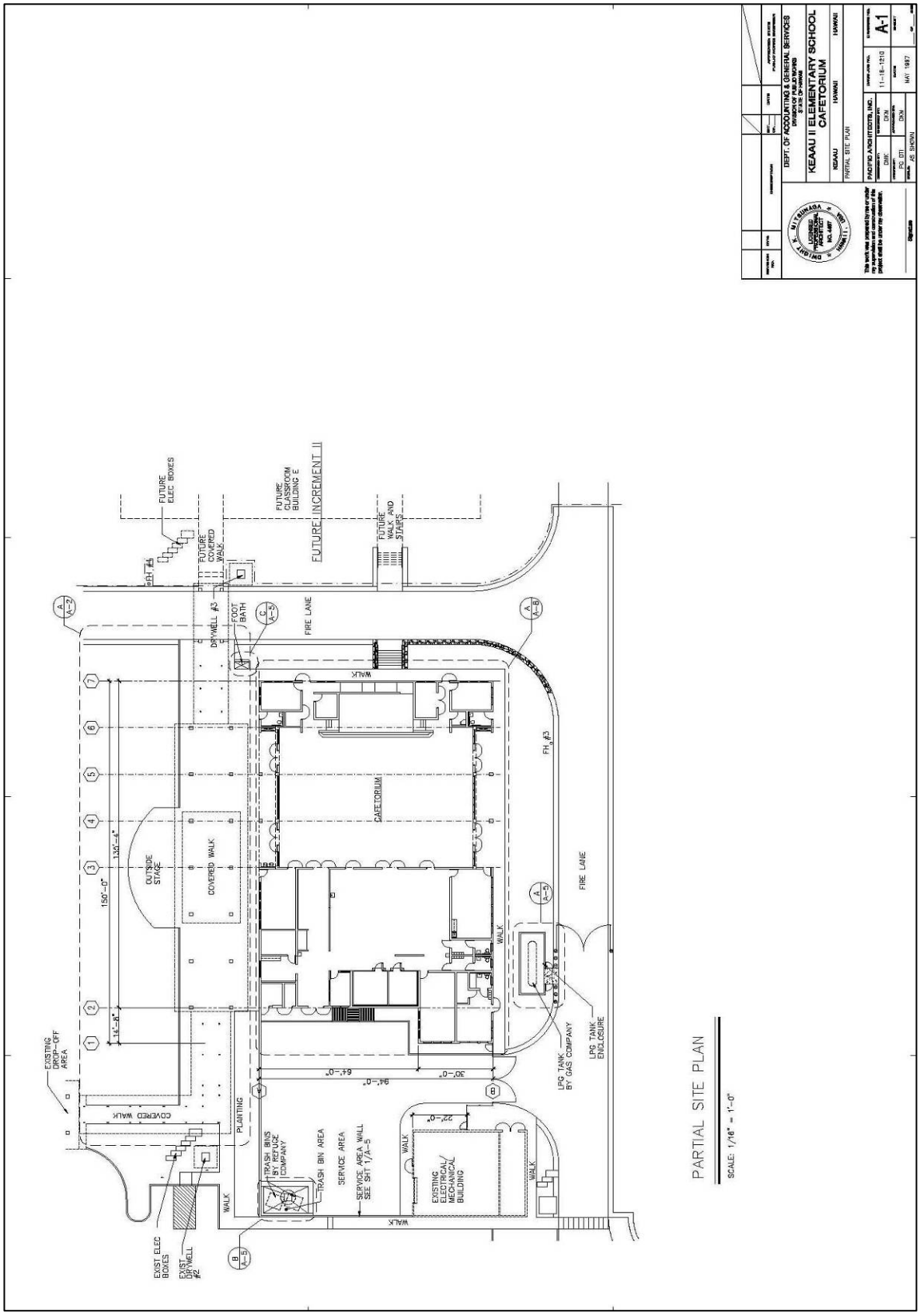


Figure 5.7 Sheet A-1



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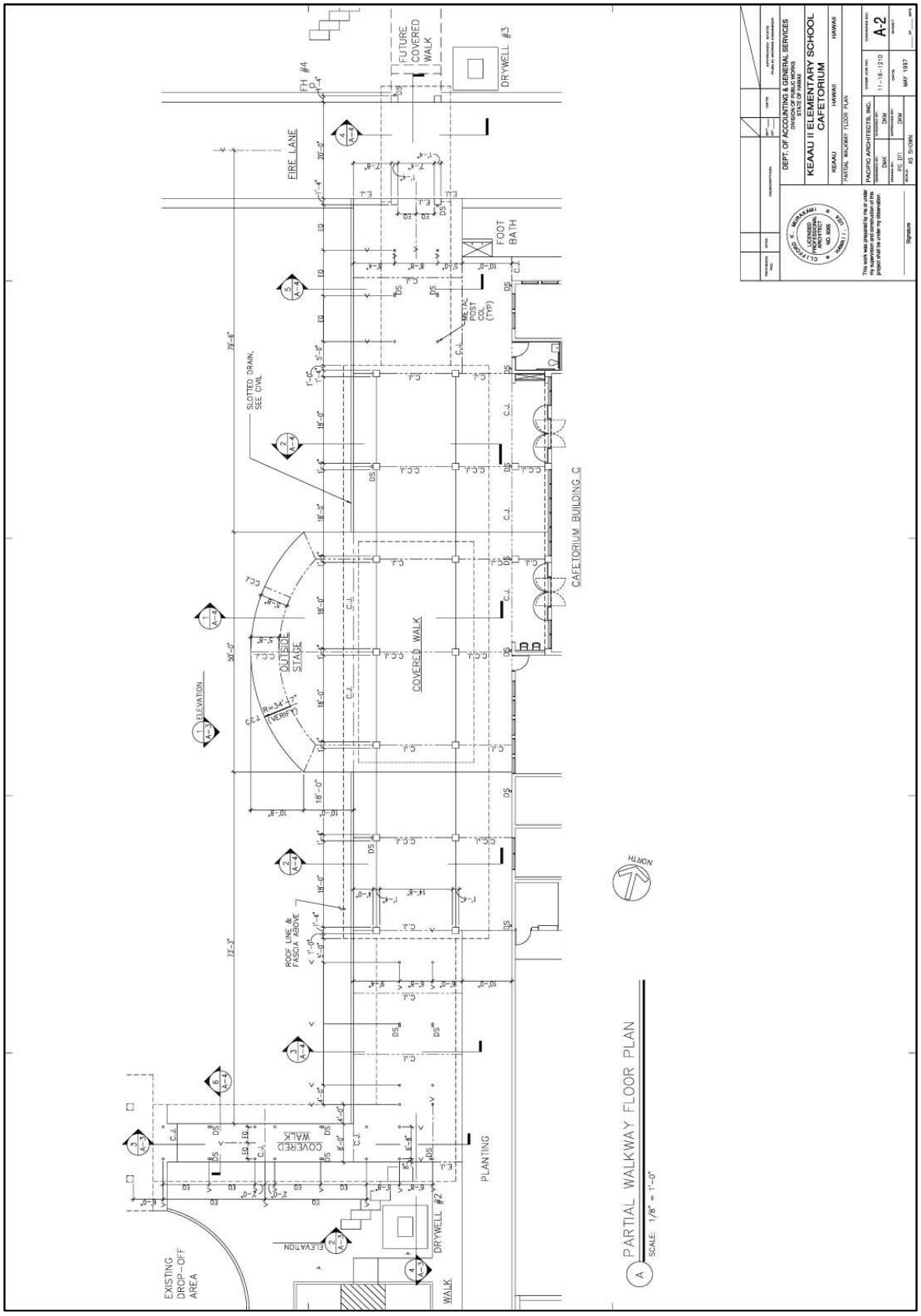
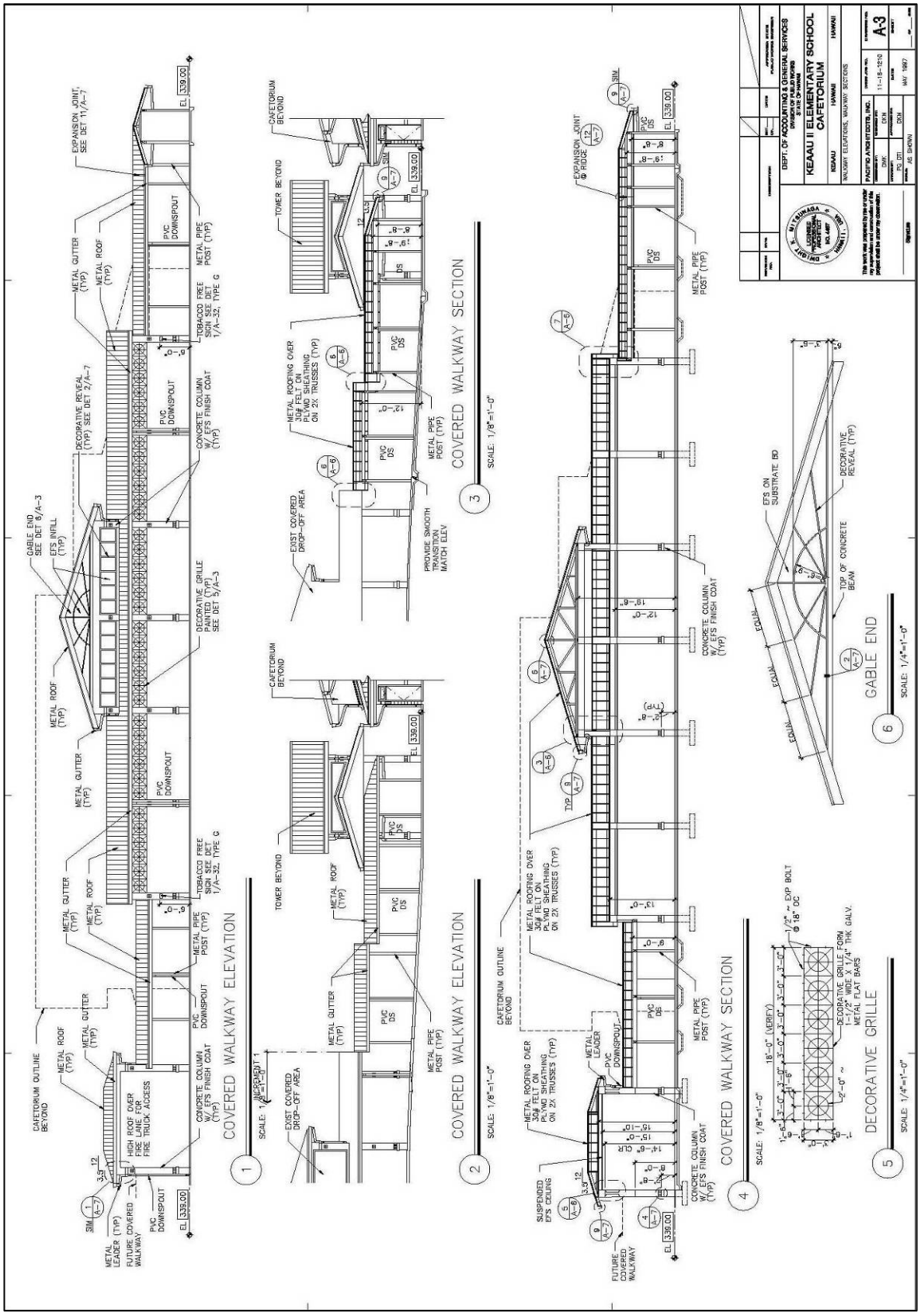


Figure 5.9 Sheet A-3



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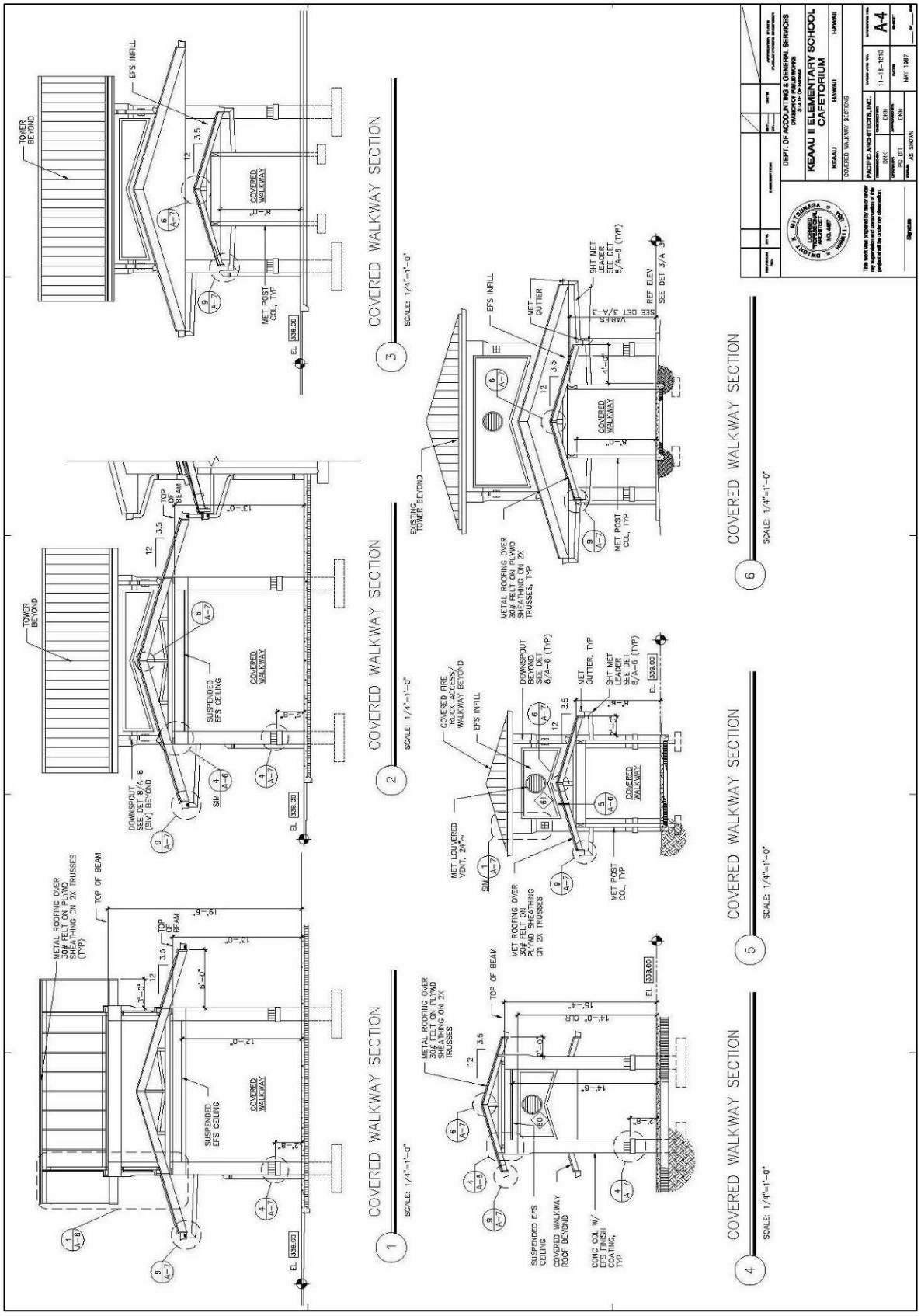

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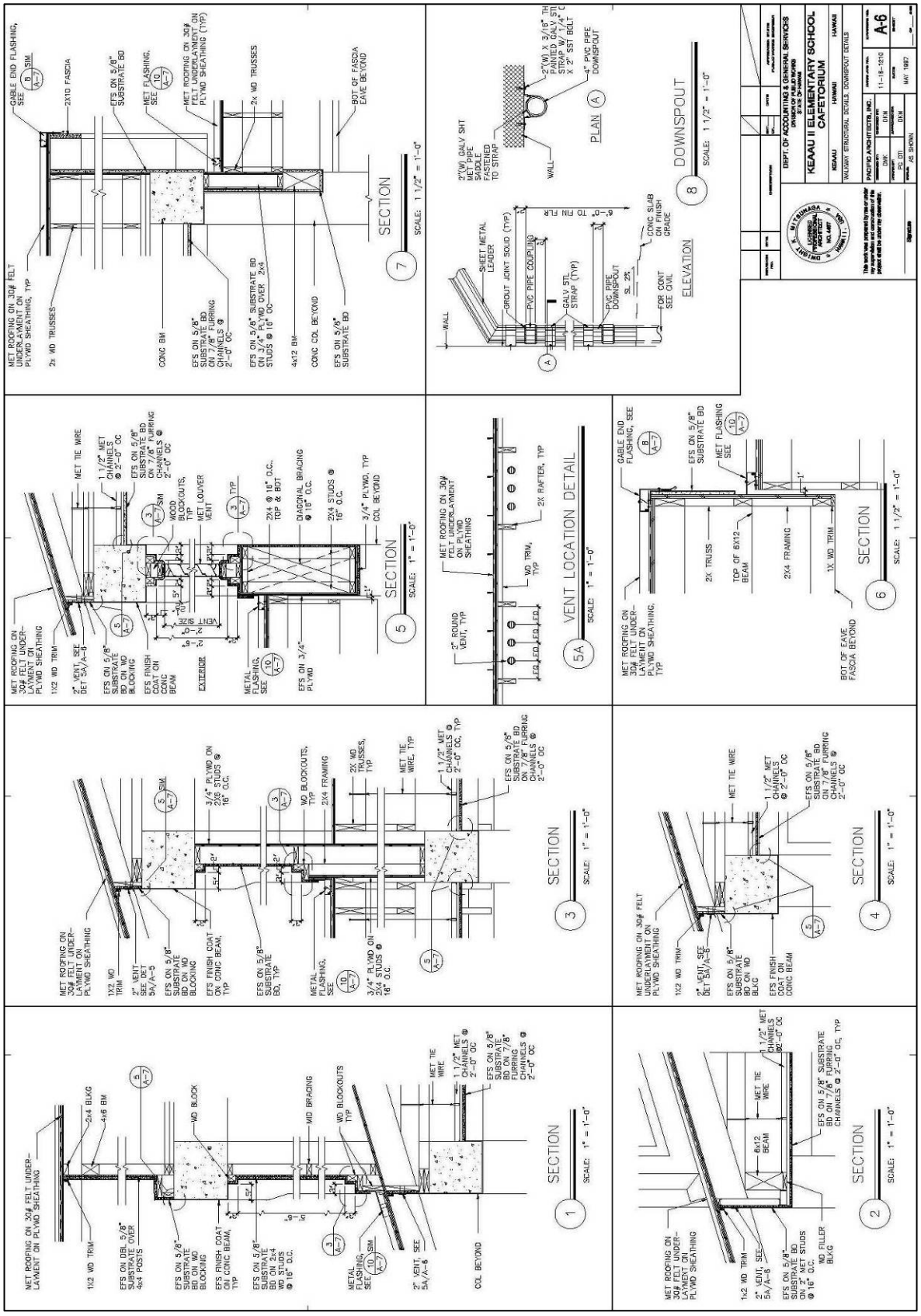

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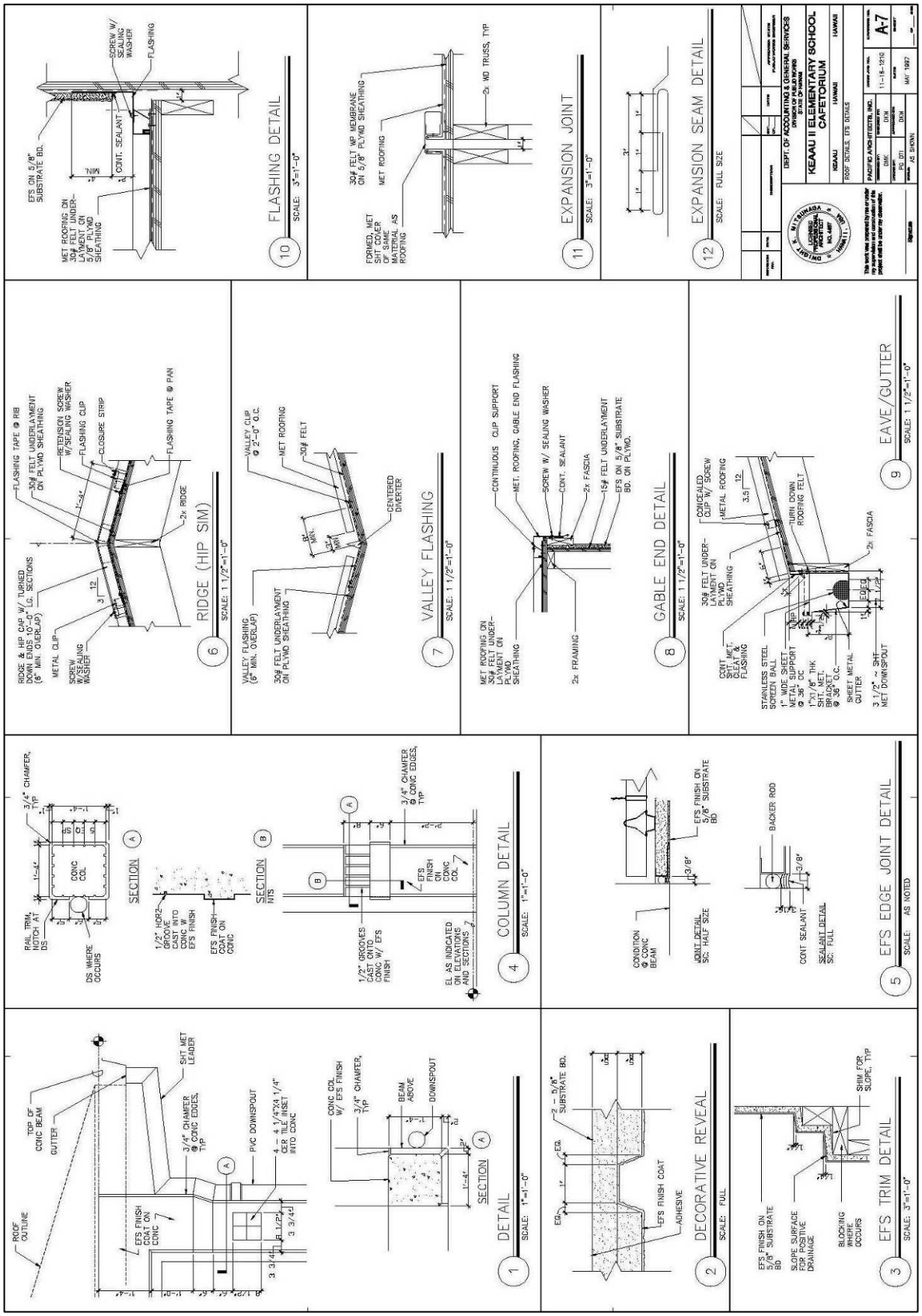

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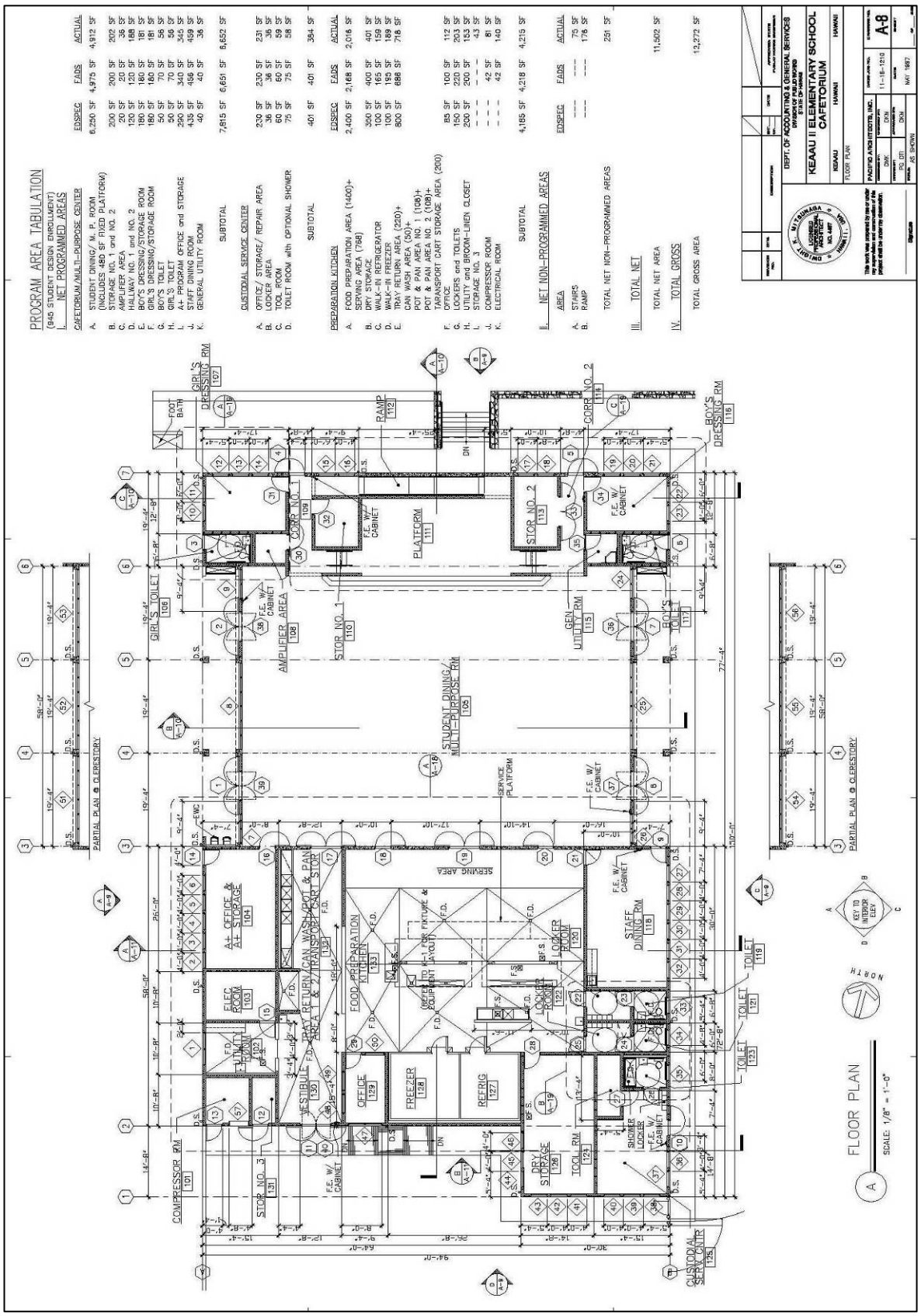

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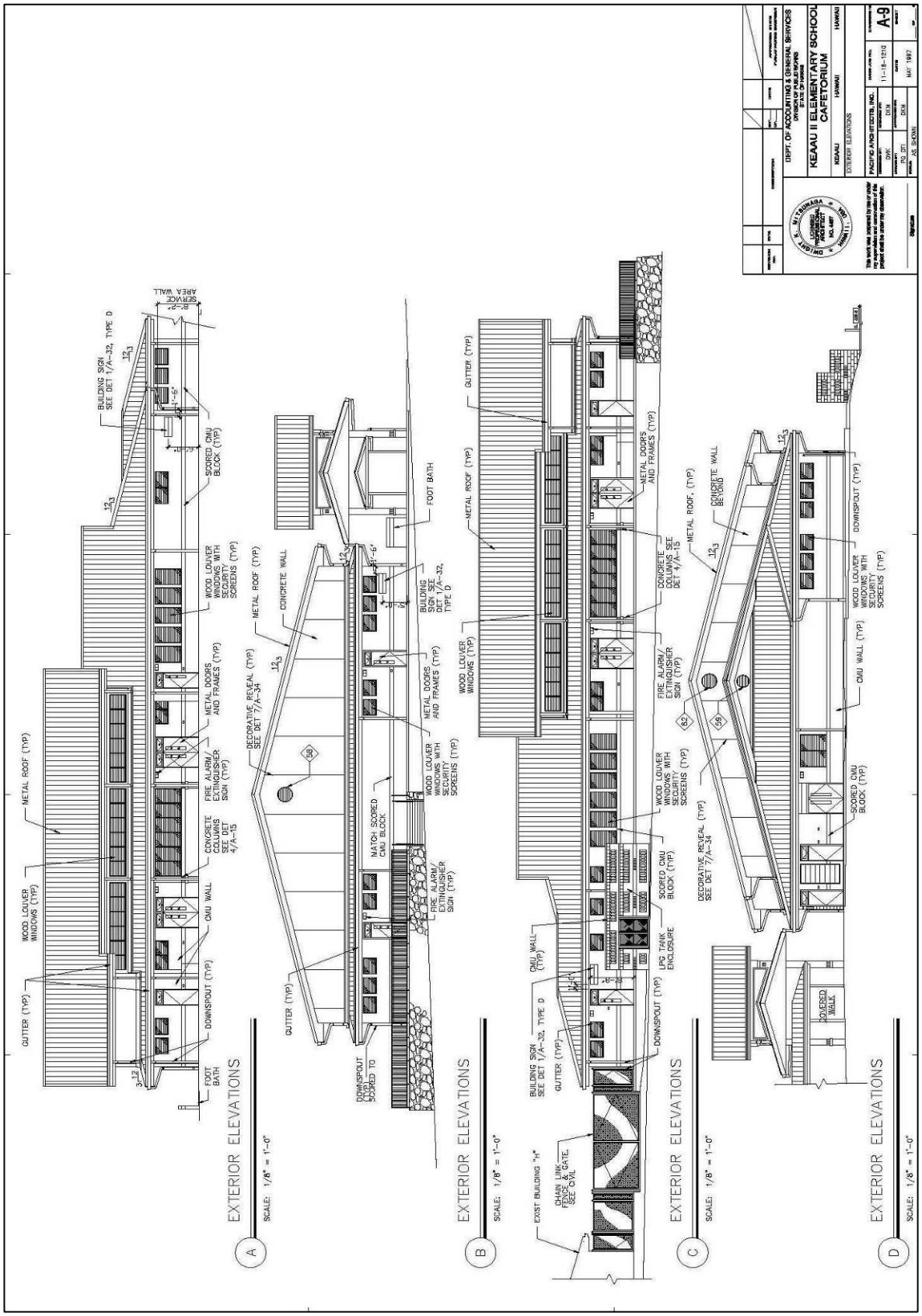

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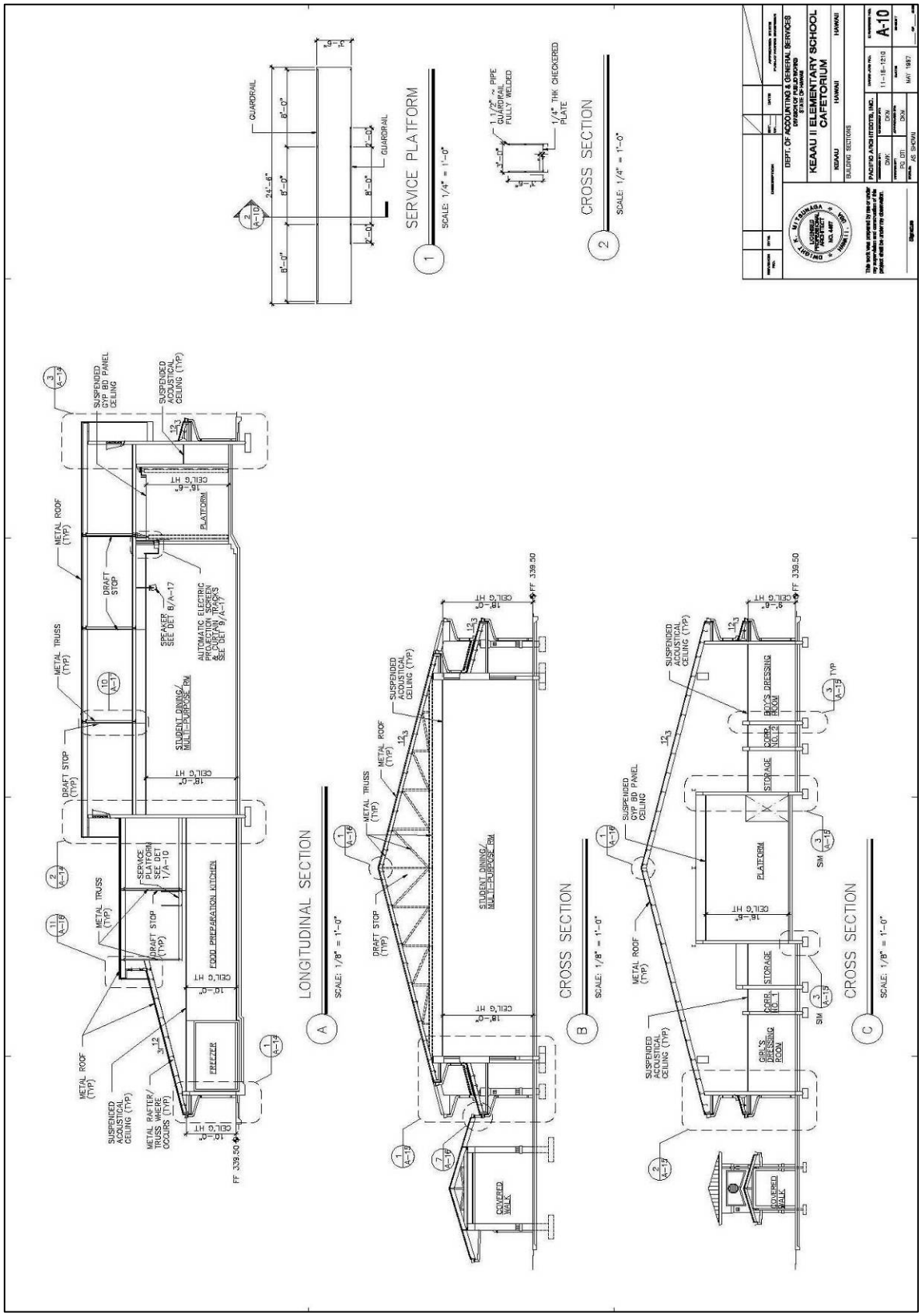

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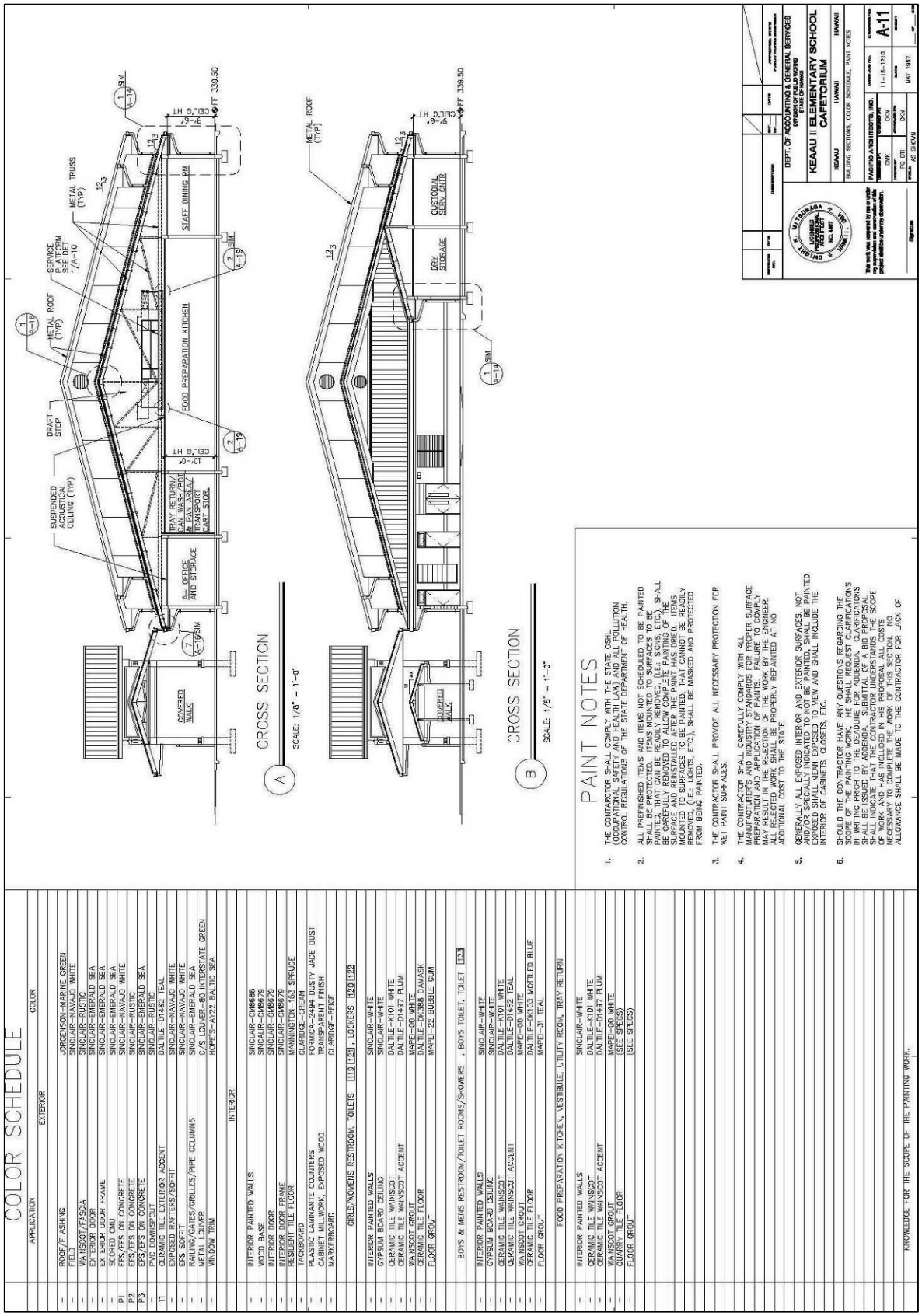

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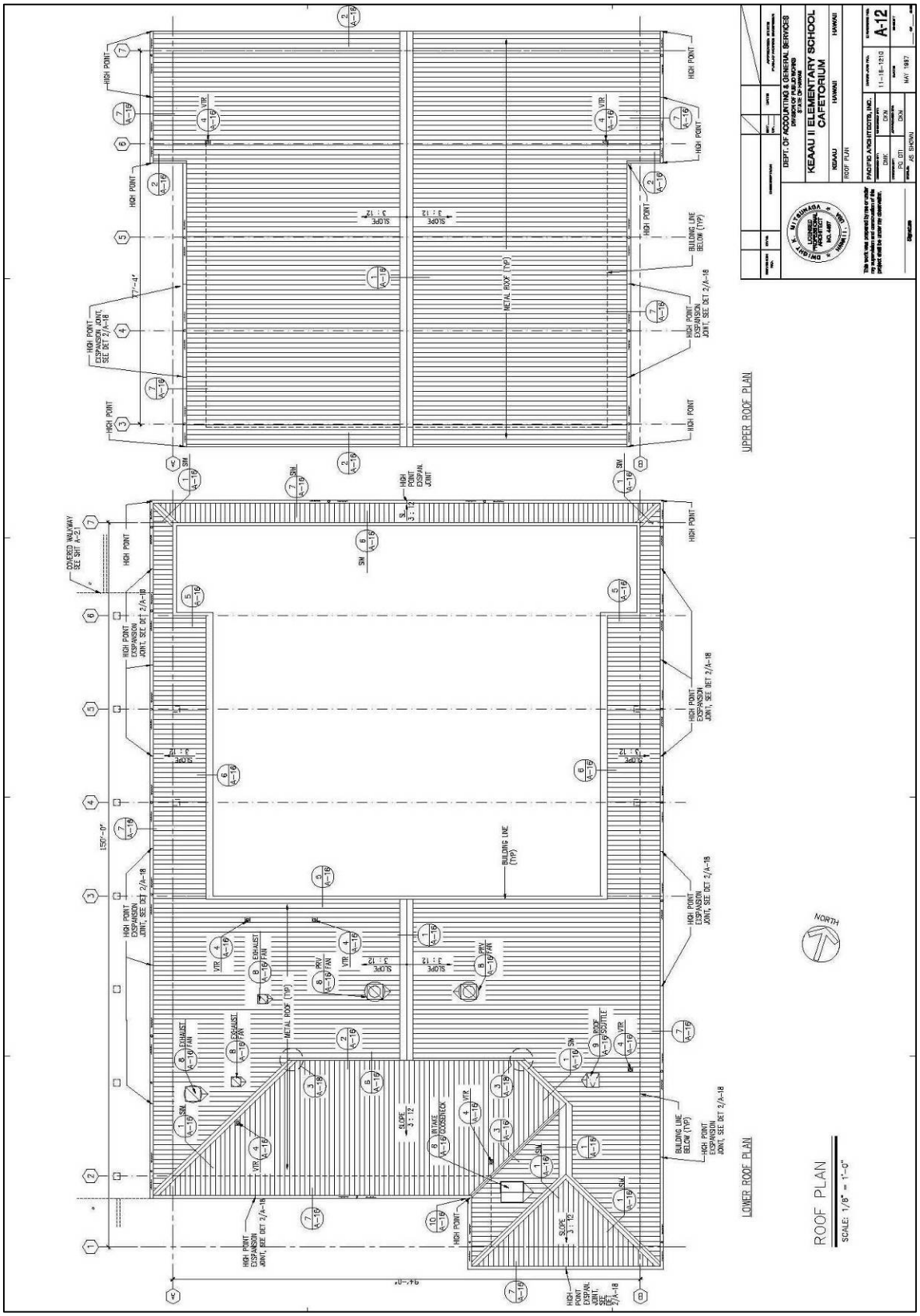

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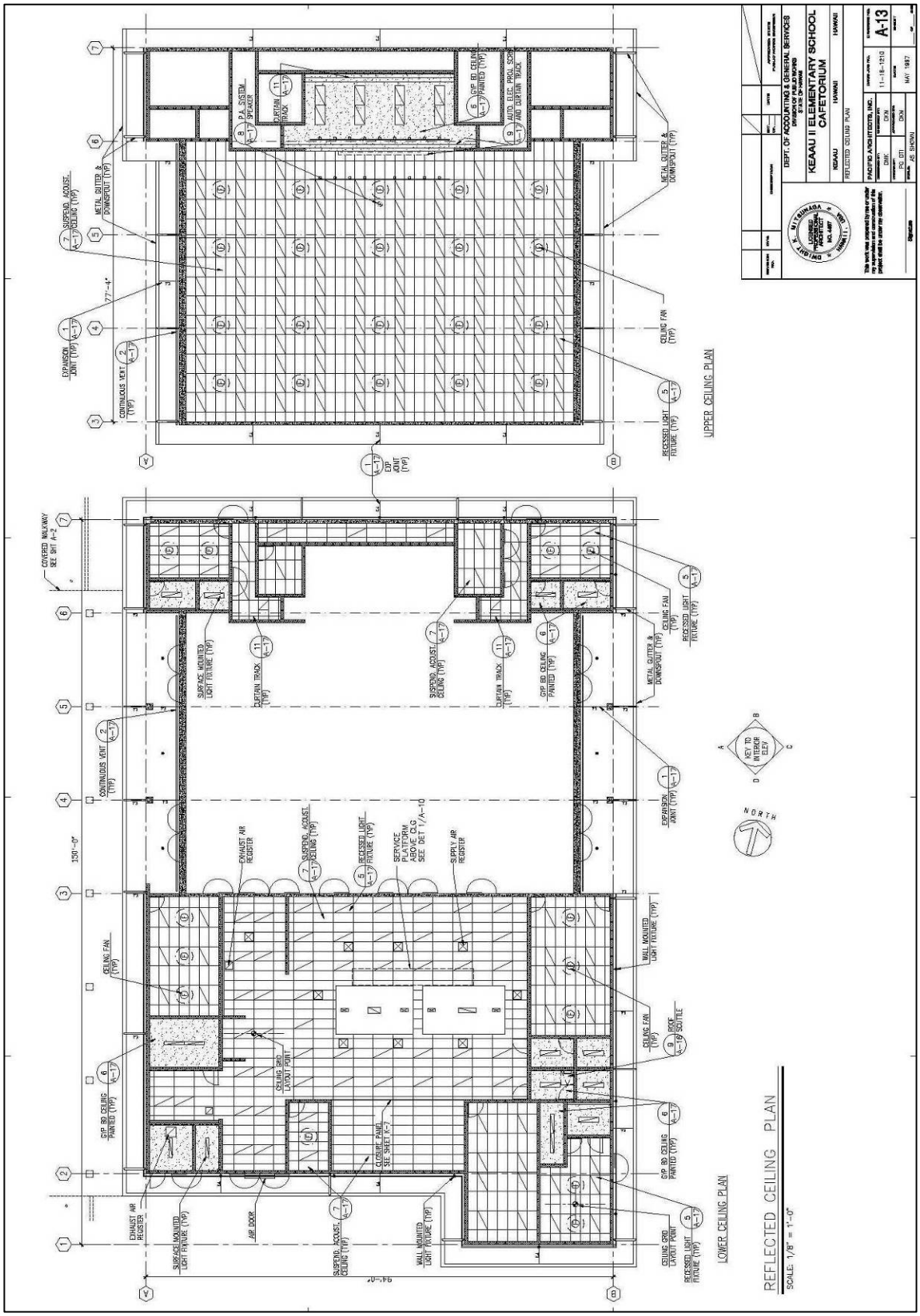

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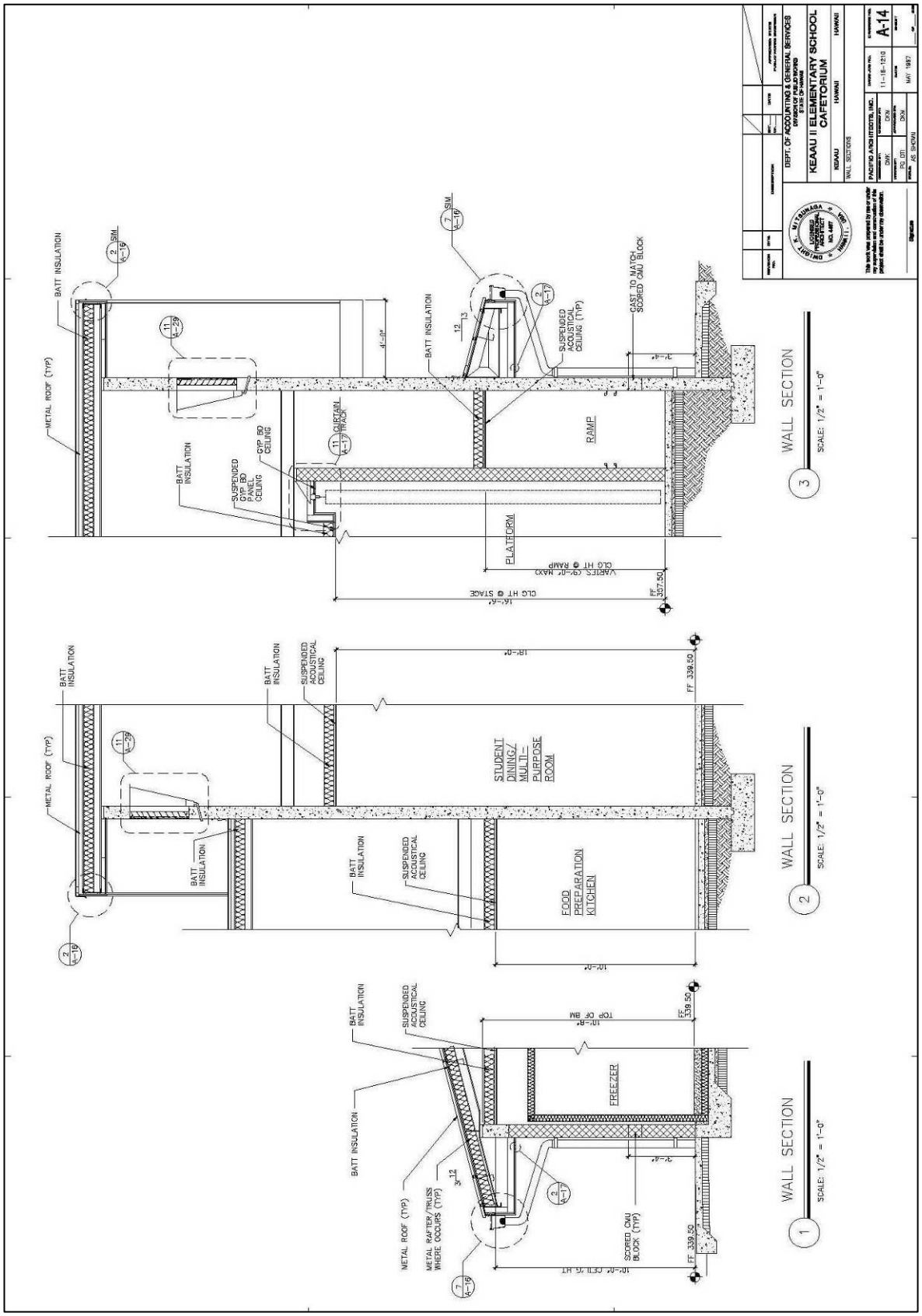

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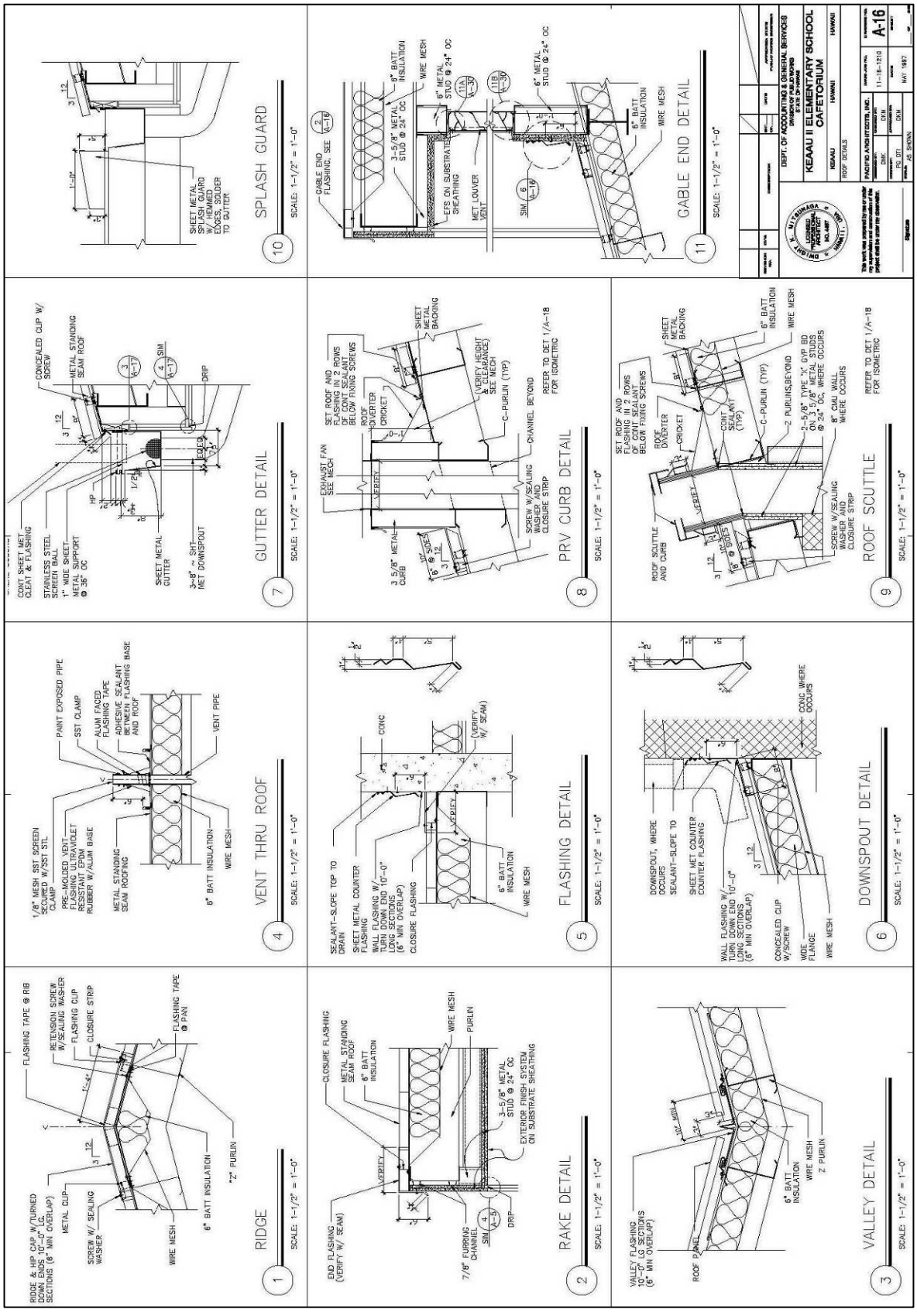

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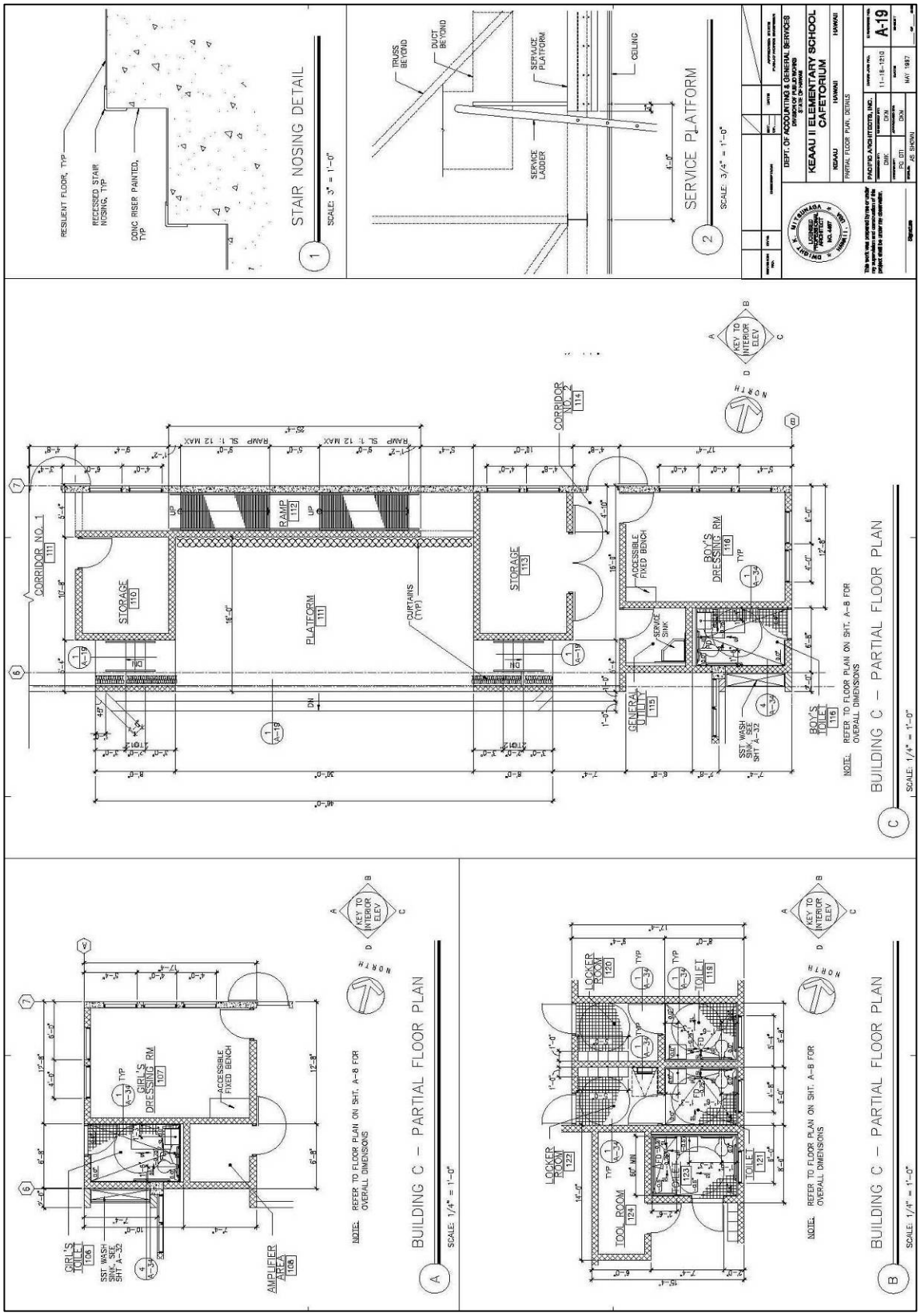

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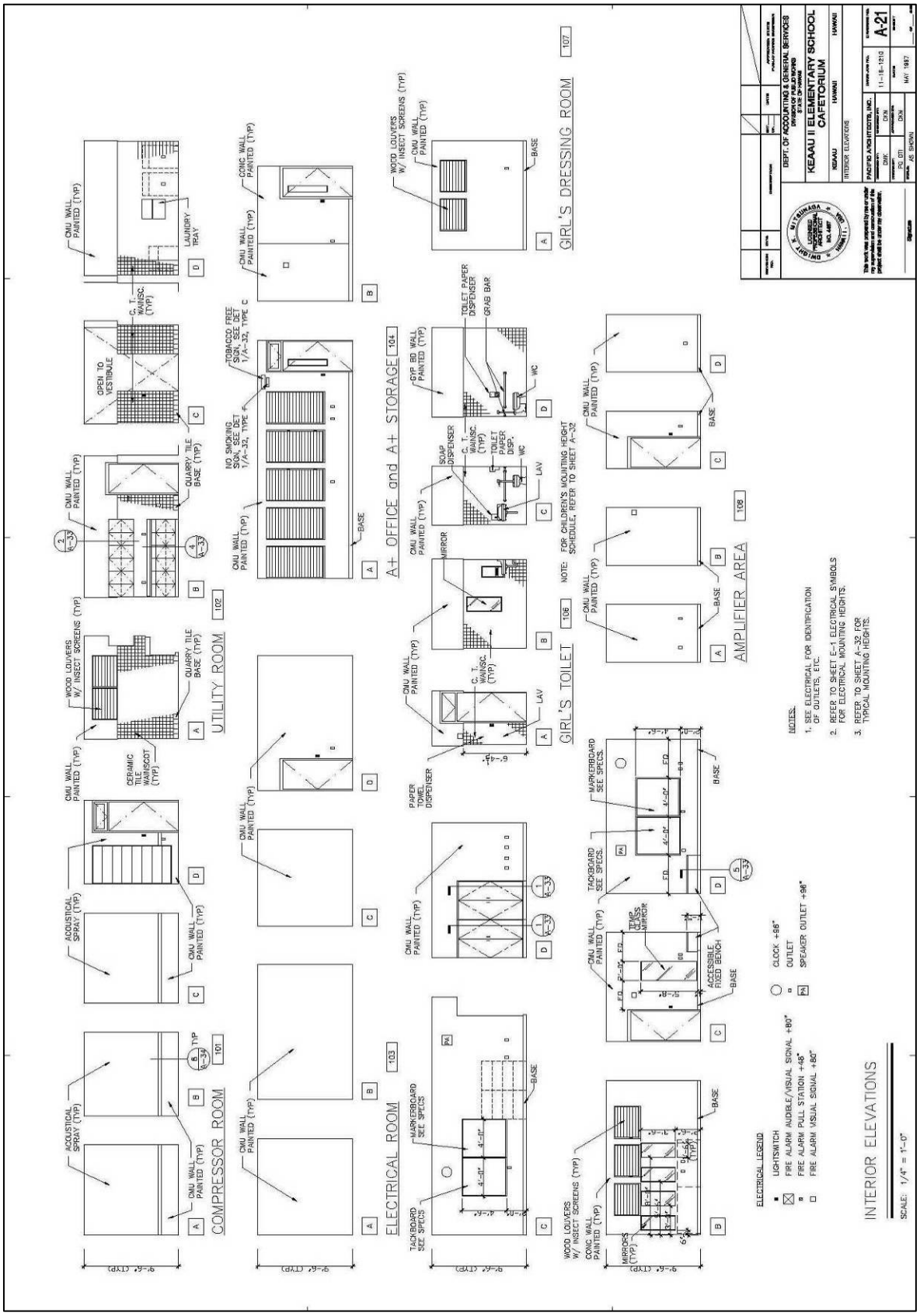

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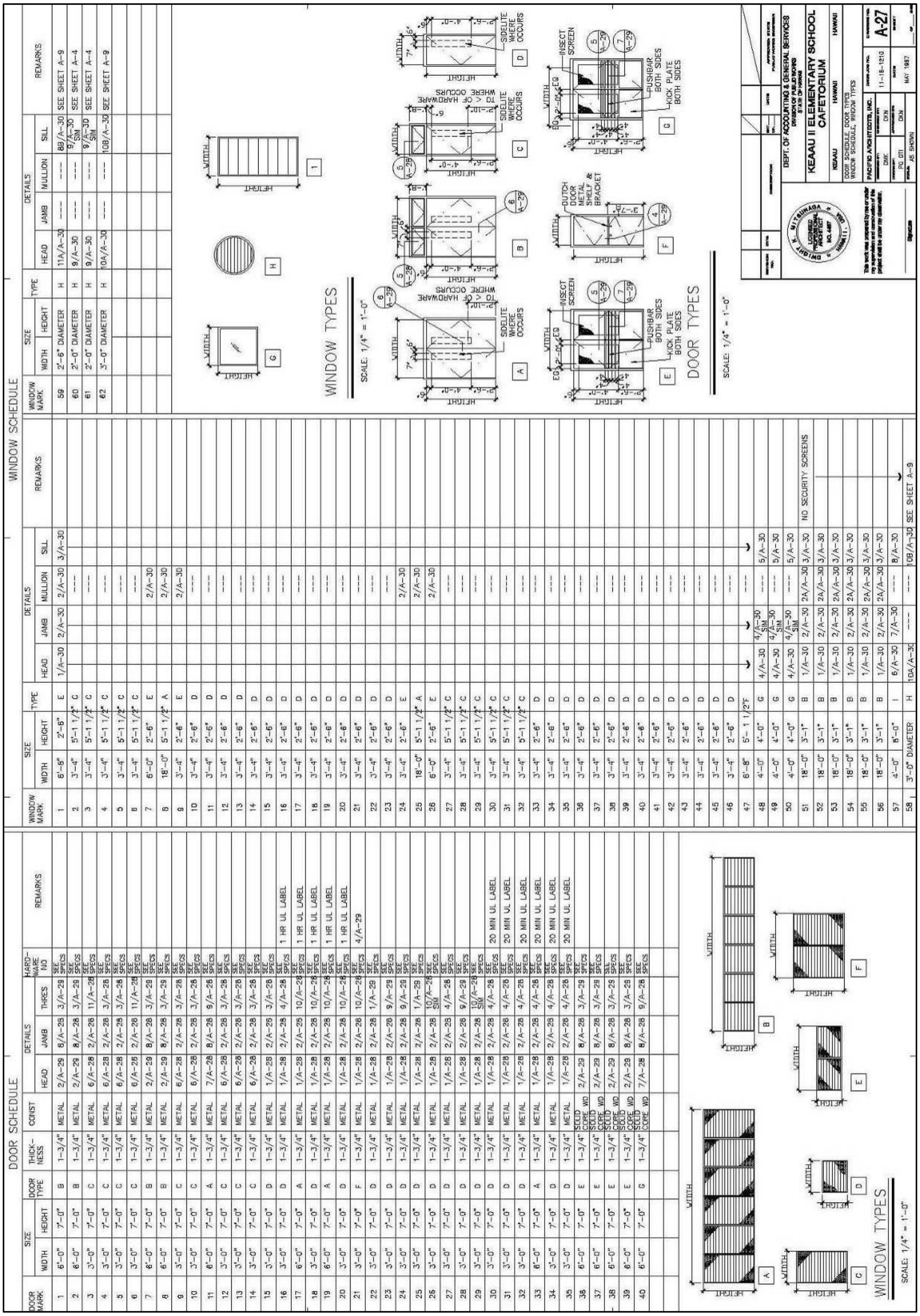

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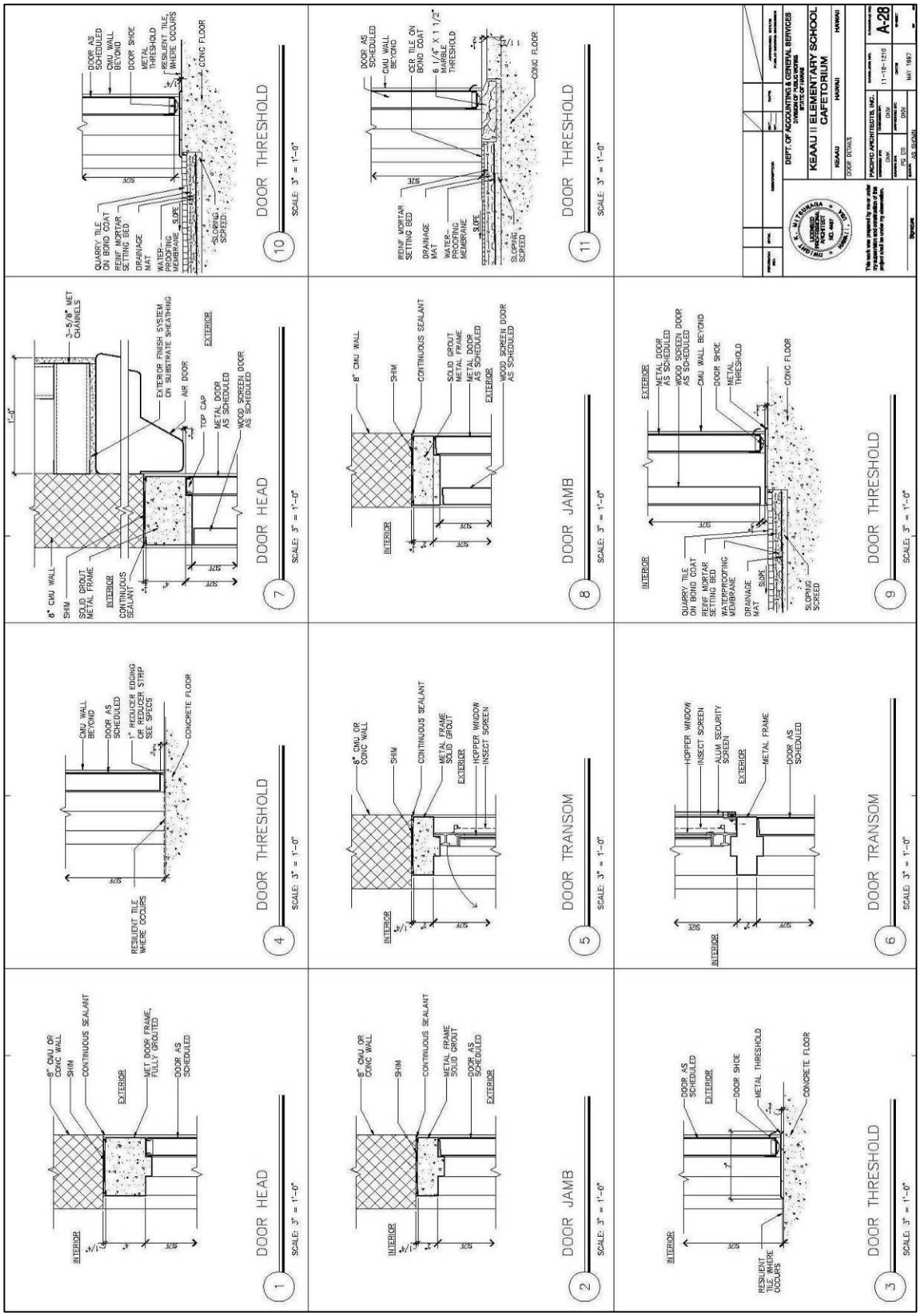

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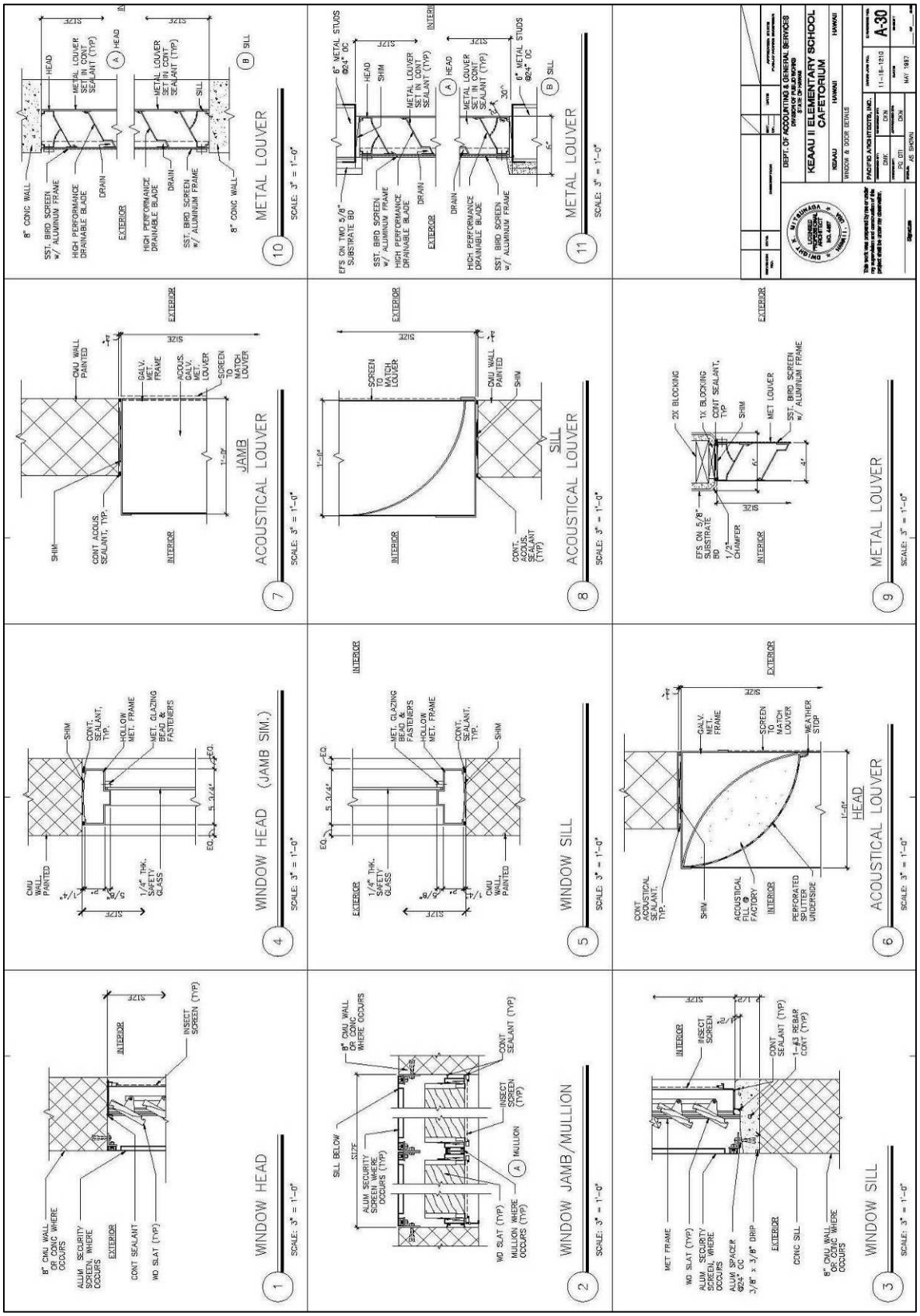


Figure 5.26 Sheet A-31

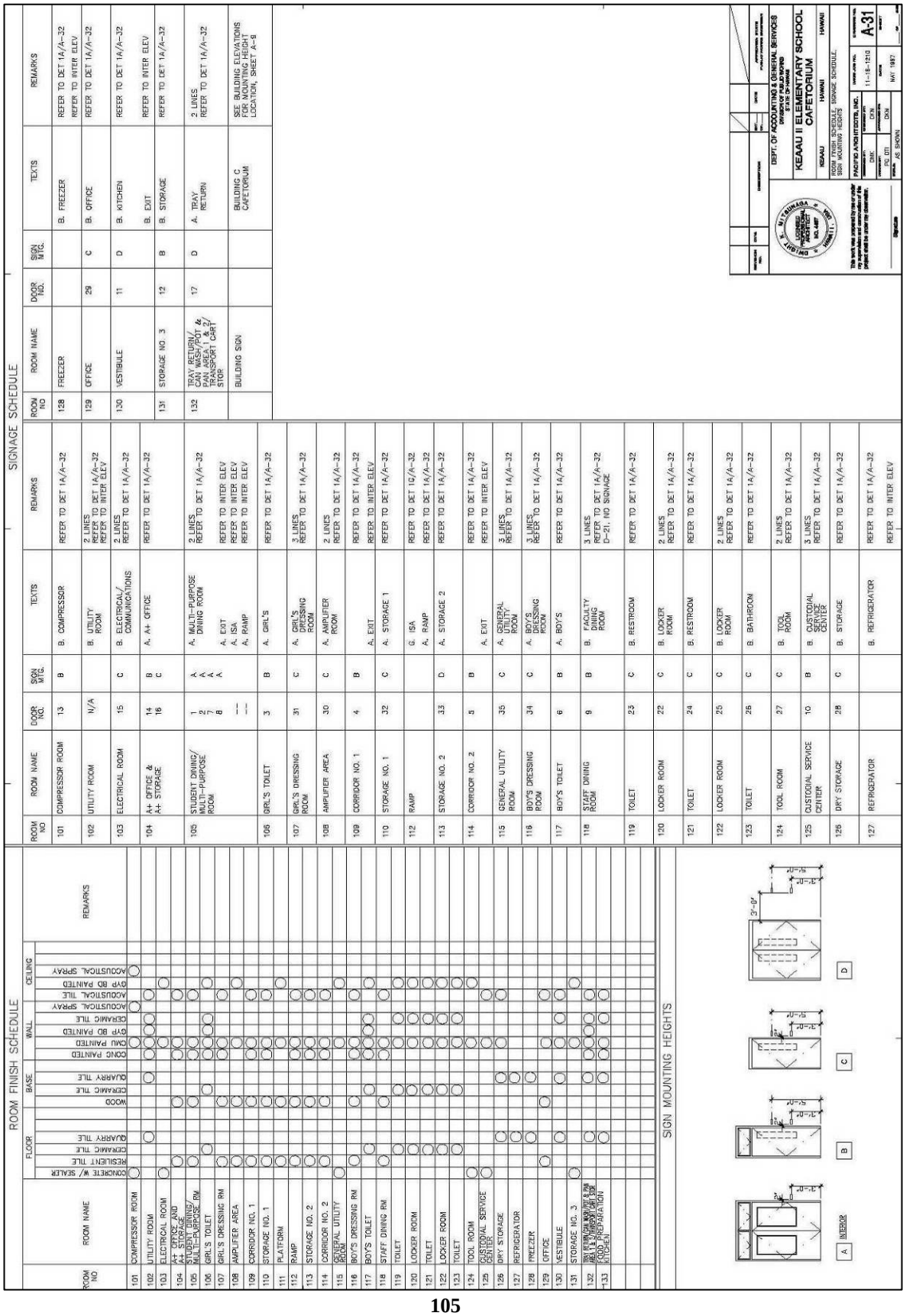
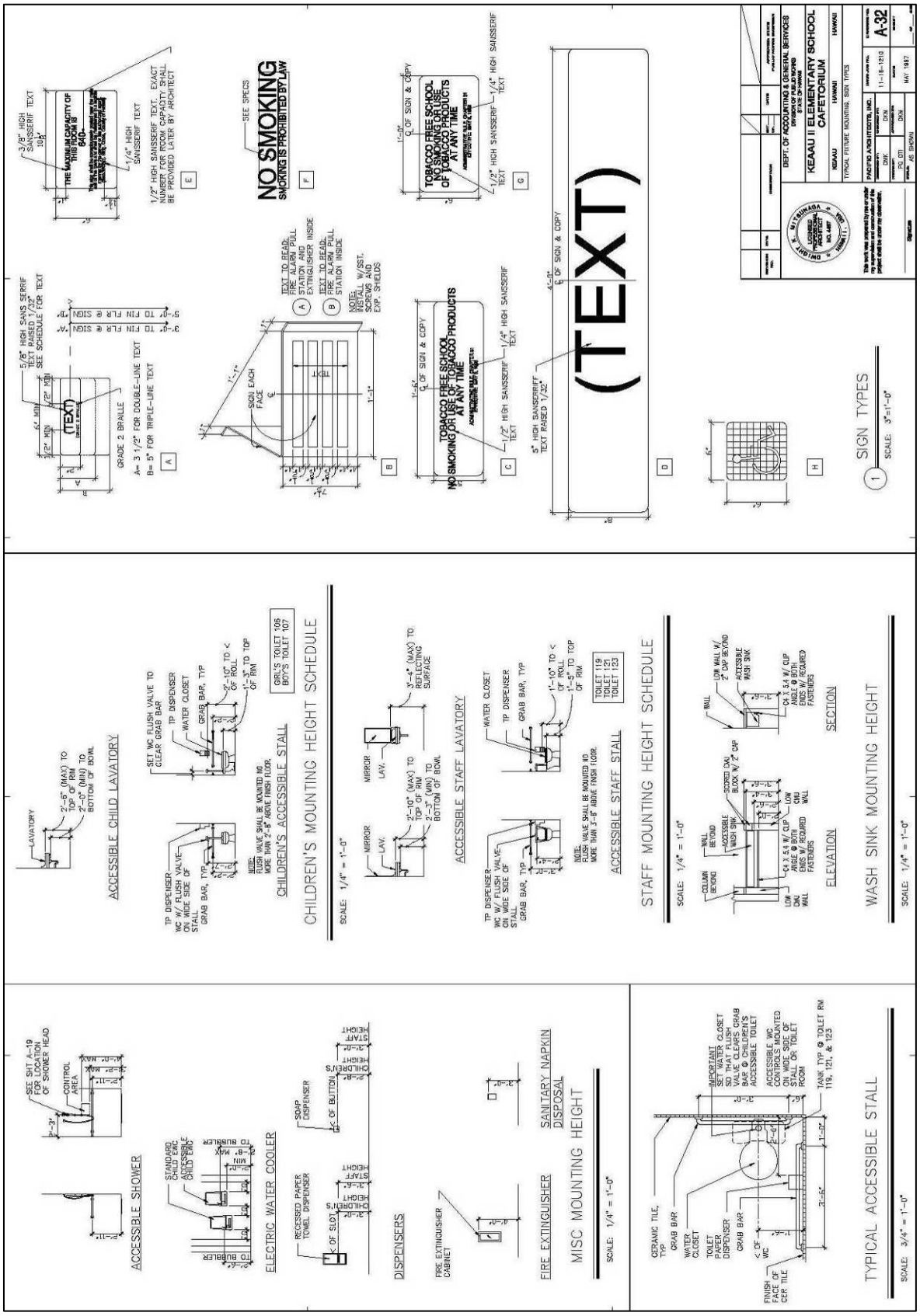


Figure 5.27 Sheet A-32



6 PROJECT DELIVERY SYSTEMS

6.1 CHAPTER PURPOSE

The purpose of this chapter is to provide the intern architect with information on recent project delivery methods applied in today's practice. This chapter provides the intern architect with an understanding of new delivery methods in addition to those previously presented in **4.6 DESIGN PROCESSES.** It should be noted that processes and trends are recurrent in nature and are often reintroduced under new descriptive names or titles. **Integrated Design, BIM, Design Assist and Sustainable Design,** describe processes that had been previously utilized but have recently gained popularity in architectural practice. Computer Technology and Research and Development (R&D) have advanced these project delivery methods beyond previous expectations and capabilities.

6.2 INTEGRATED DESIGN

Integrated Design represents the process of information accumulation and assimilation toward the successful execution of the project's design, construction and operation. It ideally requires the input of all stakeholders. These stakeholders represent a very wide spectrum. In order to effectively describe the process, the new elementary school project depicted on page 86 of Chapter 5 was designed utilizing an Integrated Design process and will be used as an example to illustrate the use of the process. This type of project delivery process is synonymous to the previously described **FACD Process; F**unctional **A**nalysis **C**oncept **D**evelopment or **C**oncept **D**esign (**4.62 Functional Analysis Concept Development FACD)**. The Integrated Design process we utilized was developed and used widely by the Department of the Navy. The design of the elementary school represented the Department of Education's first application of this design process in 1996.

The Navy's FACD process was intensely time and top-driven. It required efficient utilization of information gathered from critical sources. All design personnel, users, operators and management personnel were required to dedicate their undivided attention in intense information gathering and project development sessions. They were directed to attend all sessions to ensure immediate resolutions to any problems. This process also provided for a fast-tracked project schedule.

In order to provide total project control, we established a separate work space (satellite office) totally dedicated to the project. The space was equipped with work stations, reproduction equipment and conveniences for the design team. Hours of operations were 24 hours a day, 7 days per week for the duration of the project's integrated design phases. Personnel were able to utilize the space at their convenience with the understanding that the only work allowed was for the project. Education Department, state coordinators, school personnel and

associate parties were allowed entry. All charts, maps, schedules, design input, findings, etc. were displayed.

A special facilitating consultant was retained to control the project, to ensure that all tasks were addressed and to keep the project schedule on track. The facilitator was an independent consultant that specialized in keeping projects in positive directions. This consultant basically hosted the project and kept a detailed accounting of proceedings and results. He would also be responsible for the production of an official FACD document that required signed approvals; denoting acceptance of the proceedings and the final design.

This integrated design process for this elementary school project was divided into 3 distinct phases:

The Pre-FACD Phase represented a two-week period dedicated to research, information gathering, interviews and preparation of necessary base drawings. Venues for meetings were identified and a project schedule was established. It was very important to set dates that were convenient for all attendees. All major participants were identified and invited to attend work sessions and meeting: school administrators, teachers, students, parents, utility companies, the landowner; and state, county and municipal officials form approving agencies.

During this period material for presentation at the first meeting was prepared. This included information that would help to explain the project's scope, complexities, and basic requirements. Decisions for accommodations, refreshments and travel for the meeting were decided.

The FACD Phase was contained within a second two-week period. The first meeting included all of the invitees and served as an informational meeting. This would announce the start of the project, schedules and expectations, Attendees were asked to assist with the project's development and to aid in streamlining and expediting the approval processes. The morning session covered the site issues while the afternoon reviewed the building issues. Groups were formed to review different subjects relating to the project. Inputs and questions were then recorded after the morning and afternoon sessions. Consultants worked diligently to provide answers to questions and concerns for the next scheduled meeting.

Due to the great public response and huge community interest in this project, a steering committee was formed with representatives from a number of interest groups. They would be the voice of their constituents and meeting breaks would allow for discussion within their groups. Each meeting would find a myriad of comments, questions and concerns. Answers, proposals and designs were given at every scheduled meeting and the next meeting would present changes to the designs as well as additional clarifications. For the sake of efficiency, the design team would also meet informally with some of those groups before scheduled meetings.

Everyone was aware of the project's schedule. The end result was a document that recorded all proceedings and included the final design and input from all disciplines.

Reasons for choice and selection of materials and systems, design elements (including barrier-free and safety concerns), project costs, etc. were compiled with all illustrations and back-up materials. The document was signed for acceptance by steering committee representatives as well as by key personnel.

The success of this project delivery method was based upon several key elements:

First, the design budget allowed for a 35% design effort representing a completed site and building design. This effort allowed for the continued project development based upon an official approved design. The 35% represented a total design effort that was not anticipated to change. Issues of structure, materials, systems, safety, maintenance, operations, accessibility, etc. were addressed.

Secondly, the final document was approved and signed off by major participants and steering committee representatives. This meant that, besides being pre-informed of the project, decision makers of key government and utility organizations had agreed to help with the smooth development of the new school. There was no bureaucratic resistance to approvals.

Finally, the consultants' extensive efforts and willingness to produce allowed the project to be successful. Some period required operating nearly 16 hours per day, 7 days per week to prepare material and designs for scheduled meetings. The momentum from the FACD process also carried on into the ensuing project development phases and into construction. It was very important to have the project continue at a relatively quick pace. Many of the approvals were predetermined; allowing a smooth transition for permitting and construction.

The Pre-FACD Phase was scheduled for 2 weeks and included finalizing the FACD signed document. It included appending any added comments or concerns to the final document; reproducing and distributing copies to the attending groups. Coordination meetings were held with the design team to review the project and schedule the following phases for project development.

6.3 BIM (Building Information Modeling)

BIM is a result of the architectural profession's rapid development and growth in the last twenty years. It represents a development that has transgressed from previous, seemingly archaic manual efforts to today's sophisticated computer applications. Years of research and development had introduced its findings in such a rapid succession that the practice of architecture has seen a change unparalleled in centuries. The development of computer hardware and software has exponentially modernized the way the practice is conducted today. As

illustrated in **BIM and Integrated Design,** *Strategies for Architectural Practice,* by **Randy Deutsch**, AIA, LEED-AP[31], Figure 2.5 (p.33), "BIM has been built upon a strong foundation of earlier technologies and methods". It has developed from model building, manual drafting, to computer-aided drafting (CAD). BIM has basically allowed all three previous architectural tasks to be contained under its heading. Additional reference to the BIM design process may be found in **BIM in Small-Scale Sustainable Design** by Francois Levy[32].

The intern architect should seize the opportunity to apply his or her capabilities in computer applications to their advantage. Many seasoned practitioners are not able to personally adapt to the opportunities that computer technology offers. It is this void that the intern architect has an opportunity to fill for architectural firms. BIM allows the intern architect to decide how advanced one becomes in the field through dedication to further refinement and continued education. Professional development occurs through a number of means: mentoring, education and personal experiences. Obviously, the more one accumulates, the more adept and proficient one becomes. This effort determines the individual's self-worth and value to the profession.

It should be noted that possibilities and applications of BIM are still developing and still undefined. The uses of BIM in architectural firms are usually basic and address simple applications for 3-D imaging and problem solving. The development of the AutoCAD Revit program allows extended applications beyond the tow-dimensional drawing needs. Beside instant editing features, it has allowed for 3-D imaging representations to be modeled simultaneously. Previous programs required separate drawings to be created to accommodate developing 3-D imagery. Firms previously needed a 3-D imagining specialist to create project visualizations. Revit has now made it possible for its users to generate project renderings and models. The program also has the capacity to provide a link for other needs: development of electronic specifications, estimating, energy calculations and costs, material selection and a list of developing capabilities.

It should be noted that possibilities and applications of BIM are still developing; with its limitations as yet undefined. The uses of BIM in architectural firms are usually basic and address simple applications for 3-D imaging and problem solving. The development of the AutoCAD Revit program allows extended applications beyond the two-dimensional drawing needs. Beside instant editing features, it has allowed for 3-D imaging representations to be modeled simultaneously. Previous programs required separate drawings to be created to accommodate developing 3-D imagery. Firms previously needed a 3-d imaging specialist to create project visualizations. Revit has now made it possible for its users to generate project renderings and models. The program also has the capacity to provide a link for other needs: development of electronic specifications, estimating, energy calculations and costs, material selection and a list of developing capabilities.

Depending upon the areas of interest, BIM has developed the capacity to provide for numerous applications. It can detect discrepancies in utility systems; identify

conflicts in building systems; and identify certain needs. Assessments need to be conducted to determine the extent of BIM project application and its affordability. BIM has a potential to result in substantial cost savings. However, its application might also prove costly. Beyond basic 3-d modeling and basic applications, only the larger projects might benefit in a Cost Savings to Total BIM Application Ratio (Cost Savings: Total BIM Application = Benefit). The extent of BIM application should be carefully analyzed to determine its value to the project and to the client.

6.4 DESIGN ASSIST

Design Assist allows for the careful simulation of construction development during the design process. By bringing together qualified professionals and building specialists, the architect has an opportunity to maximize his design to the client's benefit. Working closely with a qualified contractor allows the project to identify pitfalls, resolve problems and develop a realistic budget and construction schedule. In design assist, the architect has the option to work with the contractor to develop the design or may elect to have a contractor review the design once it has been established. In any case, discrepancies and recommendations from the contractor would definitely benefit the outcome of the project. Compensation issues might range from merely obtaining input from the contractor in return for an opportunity for him to bid on the project; or a formal agreement to pay the contractor for his efforts.

The architect has the opportunity to expand the degree of his design assist effort by electing to merely retain a general contractor; or expand this effort by including other entities. He has the option to include all of his design team as well as to have the contractor also include his subcontractors. This effort might be suitable depending upon the size or complexity of the project.

Constructability and Affordability are key words that define the advantage of a design assist effort. These words appropriately describe the architect's responsibility to the project and to the client. It has to be constructed responsibly, correct and efficiently. It has to also be constructed within a specified time to meet the client's budget. As in the old adage "that time is money," this is exactly the situation that is extremely critical to all parties (owner, architect and contractor). The process seeks to establish an efficient balance between architecture and construction; design and technology.

Our firm has been able to capitalize on a special feature of our practice. As both architects and licensed general contractors, we are able to accurately determine our construction needs and costs during our design phase. We have the capacity to offer our clients a guaranteed construction price based upon our design. We have been able to fulfill our clients' needs as well as provide assistance to other architects and engineers. Our familiarity with architecture and construction allows us to analyze and price our requirements as the project develops. This offering has been very appealing to a number of our clients. All project delivery systems have the potential for variation and extensive application. Design Assist also has the

potential to provide for many different scenarios. It is a wonderful approach to pull some owners, architects, and contractors together. This enables them to develop the project by sharing understandings of their personal viewpoints and concerns. This approach may not work for everyone as there are many different conditions and requirements for every project and every client.

6.5 SUSTAINABLE DESIGN

Sustainable Design practices have recently become a requirement for the majority of projects encountered by architects today. Granted, sustainability has always been a part of responsible design but it has become much more prevalent within recent years. Previously, our sustainable practices focused on utilization of natural design principles; building orientation to sun direction, wind direction, elements for sun shading and day-lighting, etc.. It was a voluntary means to minimize the rising costs of utilizing energy. Today, it becomes a mandatory application that architects need to be aware of and to be educated in. The practice of sustainable design has been mandated, in some instances, by government agencies at all levels and are then very strictly controlled. In Hawaii, the State government has mandated that its new projects obtain a rating of LEED Silver or better. The Army Corp of Engineers has initiated a goal of achieving a Spirit Gold rating for its projects. Spirit Gold is the equivalent of the LEED Silver rating. The depletion of natural resources, fossil fuels, concern for the effects of carbon footprints and excessive energy costs have all brought separate interest groups together to demand regulated, responsible and sustainable design.

In order to be effective, intern architects need to be aware of the developments and changes occurring in this area of practice. In one's future role of being the prime consultant, the intern architect will be responsible for coordinating the efforts of the design team. In this capacity, one needs to be familiar with the requirements of the various disciplines. All areas of design are required to conform to regulations and strict values pertaining to the preservation of natural resources and the intent to recycle materials. Site planning requirements of distances to conveniences (shopping, schools, parks, etc.); utilization of certain development areas, control of site utilities and appurtenances; alternative energy resources; use of recycled building materials; installation of Energy Star appliances; control of waste and recycling programs on the construction site; etc. are just samplings of sustainable design issues.

The U.S. Green Building Council is one of the leading organizations in sustainable design development. It has initiated and encourages the application of LEED principles. **LEED** represents **L**eadership in **E**nergy and **E**nvironmental **D**esign. It has established a program for certifying LEED professionals. Projects are often subjected to a LEED rating system that establishes the project's compliance to sustainable design practices. According to the extent of utilizing principles among the design team's disciplines, points are awarded and tallied to determine ratings. These are then rated as LEED Silver, LEED Gold, and LEED Platinum. The following passage from the **LEED REFERENCE GUIDE FOR GREEN**

BUILDING DESIGN AND CONSTRUCTION, 2009 Edition (page xii)[33]**,** provides an explanation of the rating system categories:

"The LEED rating systems are designed for rating new and existing commercial, institutional, and residential buildings. They are based on accepted energy and environmental principles and strike a balance between known, established practices and emerging concepts. Each rating system is organized into 5 environmental categories: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, and Indoor Environmental Quality. An additional category, Innovation in Design, addresses sustainable building expertise as well as design measures not covered under the 5 environmental categories. Regional bonus points are another feature of LEED and acknowledge the importance of local conditions in determining best environmental design and construction practices."

The intern architect is encouraged to be familiar with the requirements of LEED and LEED certification. There are definite incentives and/or consequences pertaining to the pursuit of being LEED Certified. Some clients require that firms maintain LEED personnel on staff or the need for a licensed architect to also be LEED Certified. The following contact information is provided for further information:

U.S. Green Building Council
2101 L Street, NW
Suite 500
Washington, DC 20037
(800) 795-1747 Office
(202) 828-5110 Fax
www.usgbc.org

Other organizations have also developed their standards pertaining to their particular interests. The National Association of Home Builders initiated its green building efforts in 1998. It has since developed its **NATIONAL GREEN BUILDING STANDARD, ICC 700-2008**[34] to address new residential construction, site development and remodeling and renovation to existing buildings. They also have an education and certification program designating builders as **Certified Green Professionals (CGP).** More information may be obtained on this subject at:

National Association of Home Builders
1201 15th Street, NW
Washington, DC 20005-2800
(800) 223-2665
www.BuilderBooks.com
Item #00260

Additionally, numerous AIA interest groups have developed or are in the process of developing their own sustainability standards to meet requirements of their fields of expertise (education, health, justice facilities, etc.). My AIA area of

interest has been with the Academy of Architecture for Justice (AAJ) for quite a number of years. Their resources for sustainability are **The Greening of Corrections**[35] and **Sustainable Justice 2030: Green Guide to Justice**[36]. Additional information may be received at www.aia.org/aaj.

It should be noted that; as the practice and basic principles of sustainable design has been in existence for quite awhile; there should be some attempt to research and evaluate the effects of previous design applications. In the1960's, there were designs being developed that introduced "saw-toothed" roof monitors to allow for natural lighting and natural ventilation. This design feature seemed very unique and practical at that time and was widely employed both in the design studios and in practice. It was applied to designs of numerous building types …residential, educational, industrial, etc. In the mid 1980's, we were actively involved with roofing efforts to remove these structures and provide continuous roofing systems in their place. We removed these design elements from a number of school buildings and aircraft hangars (for the military). These projections became a major source of water infiltration. We found many of the louvered areas boarded up and their connections at the roofs torn and leaking. Having seen a recent resurgence of this design feature, it is hoped that our new technology will address and resolve any previous shortcomings.

The preceding project delivery systems provide the intern architect with only a basic understanding of recent preferences and developments. It is hoped that intern architects will continue to help advance our profession by learning to adapt and implement these and future delivery systems effectively and responsibly.

7 SUMMARY

7.1 PARTING COMMENTS

I hope that the information I have provided will help to prepare you for a smoother assimilation into the architectural workplace. It has not been my intent to say that practice should be conducted in any particular way or that you should develop in any standard manner. There are numerous paths for recent graduates and intern architects to pursue. You will all develop different interests, at different rates and certainly establish different lifestyle choices. Through it all I hope you will realize that you will get out of this architectural profession what you put into it. Any experience affects us; whether it is good, bad or indifferent. In any case you will benefit from it.

You must continue to pursue knowledge; and in many cases knowledge through experience. Many of you have developed interests over the years. Make use of your personal interests and experiences as references for your future projects. You will later realize that your input into future projects whether that contribution has been gained by merely observing or through your daily interactions is valuable. Be observant and focused. Expose yourself to as much as the architectural field has to offer. Challenge yourself; develop to your expectations. Seek role models and network with your peers and other professionals. Attain promotions and positions that provide you a measure of your development. Continue your education and establish your credentials; seek licensure.

Architecture school has already challenged your desire to be in this field. As intern architects, you have all succeeded. My intent has been to help you by sharing part of my knowledge and experiences with you to avoid pitfalls and uncertainties that I have encountered; to allow you an extra step forward. If you have learned even a little from this book, then I will have succeeded in contributing back into our profession by sharing with you. Please accept my best wishes for your continued development and success; and in the future, please remember to help others… thank you.

Sincerely,
Dr. Dwight K. Mitsunaga, AIA, NCARB, Arch D, GC, CGP

1 Terminolgy

Construction drawing not only conveys information by lines, symbols, dimensions and graphics, but in substantial part, by lettered notations. These notations should be consistent and clear.

Terminology should also be consistent between agreements, drawings, specification and cost estimates. The use of several words for one meaning can only lead to different interpretations by the many parties who use the documents.

This list of terms is not intended to be a dictionary.

RECOMMENDATIONS

The recommended use of words shown in the following list have been limited to those which experience indicates are most often misused and are sources of confusion. Words which are consistently used and understood are not included.

Specialized projects may require that particular uses be established for other words in order to keep notations consistent throughout the documents.

Capitalized terms denote recommended usage. 'Lower case terms denote undesirable or misleading variants which should be avoided in drawings and specifications.

Comments are for assistance in defining terms more clearly.

ACCESS DOOR	Prefabricated assembly including frame, door, and hardware. Not included in door schedule.
ACCESS FLOOR	Not "pedestal floor", "free access floor", or "computer floor".
ACCESS PANEL	A section of finish which can be opened.
ACOUSTICAL PANEL, ACOUSTICAL TILE	Not "acoustic", or "acoustic board'. An acoustical panel is usually ‘lay-in", whereas acoustical tile is limited to l'-0" x l'-0" products.
ACOUSTICAL SEALANT	Non-hardening used to seal partitions to structural ceiling, walls and floor to reduce sound transmission. Not "sound calking".
ACOUSTICAL SEAL	Preformed tapes, gaskets, etc.
ADHESIVE	Do not use "glue" unless the particular adhesive is commonly called "glue" (such as for wood). Do not use "cement", "paste", or "mastic"
ALTER, ALTERATION	Not “remodel”.
ALTERNATE	Use for pricing for **Owner’s** selection. Use OPTION when there is a Contractor’s choice.
ANCHOR BOLT	A bolt that is embedded in masonry -or cast-in-place concrete. Do not use to describe an expansion bolt or a bolt in an expansion shield.
ANODIZE	Not "alumilite", "alodize", "kalcolor", or "duranodic", etc. Avoid use on drawings.
Apply	Use **INSTALL**. Avoid use on drawings.
AS-BUILT DRAWING	A drawing or print marked y the Contractor to show actual conditions as constructed. For Architect's drawings, see **RECORD DRAWING**.
ASPHALT CONCRETE	Not "bituminous concrete" or 'asphalt paving'.
Asphalt Roofing	Use **BUILT-UP ROOFING.**

BACKING A continuous support or material behind entire area of finish; as opposed to intermittent or edge support. See also **BLOCKING**.

Bar Joists Use **STEEL JOISTS.**

BASE COURSE Aggregate fill under Asphaltic Concrete paving. See also **CUSHION FILL.**

BASE FLASHING "Composition", "synthetic" or "built-up" flashing bonded to roofing membrane where a floor or membrane meets a vertical surface.

BATT INSULATION Use for roll type insulation for installation between studs or joists, either pressed fit or stapled. See also **BLANKET INSULATION**.

Bituminous Generally a specification item. Do not use on drawings.

Blackboard Use **CHALKBOARD.**

BLANKET INSULATION Roll type insulation for installation over suspended ceiling on plane wall surfaces. Either laid loose or secured with stick clips. See also **BATT INSULATION**.

BLOCKING Intermittent or edge support, as opposed to continuous support. See also **BACKING**.

Borrow Light Use **GLAZED OPENING**.

BUILDING PAPER Sheathing paper or felt.

BUILT-UP ROOFING Not "tar and gravel", "asphalt roofing", etc.

Bulkhead Do not use

Bulletin Board Use **TACKBOARD**.

Butyl Membrane Use **WATERPROOFING**. Specifications define types.

Calk, Calking Use **SEALANT**. Specifications define types.

CARRYING CHANNEL In suspended ceiling construction a three-sided metal member used to support the entire ceiling system.

CASEWORK Not "cabinet" or "case"

CASING BEAD A plaster stop. Do not use for gypsum wall board trim. See also **METAL TRIM.**

CEMENT Use for "Portland Cement". Do not use for "glue" or "adhesive".

CEMENT FIBER PANEL Not "wood fiber", "tectum", etc.

CEMENT PLASTER Not "stucco". Used to describe all Portland Cement plasters. **PLASTER** is preferred generic term for drawings.

CERAMIC MOSAIC TILE An unglazed tile formed by either the dust-pressed or plastic method, having a facial area less than 6 sq.in. and either porcelain or natural clay composition**. CERAMIC TILE** is preferred generic term for drawing use. See also **CERAMIC TILE, GLAZED TILE**, **PAVER TILE** and **QUARRY TILE.**

CERAMIC TILE Preferred generic term for drawing use. See **also CERAMIC MOSAIC TILE, GLAZED TILE**, **PAVER TILE**, and **QUARRY TILE**.

CHALKBOARD Not "blackboard".

Chipboard Use **PARTICLEBOARD**.

COLD JOINT Use when the material on one side of the joint is to be set or hard before the other side is installed and not particular bonding is expected.

Computer Floor Use **ACCESS FLOOR**.

Concrete Block Use **CONCRETE MASONRY UNIT**.

CONCRETE MASONRY UNIT Not "concrete block", "cinder block", "hollow tile", etc.

CONDUCTOR HEAD Sheet metal box-like form to collect water from scuppers or gutters for discharge into downspouts.

CONSTRUCTION JOINT Use where it is desirable to show exact location of a joint which is necessary to the construction process but continuity or bonding is required.

CONTROL JOINT	A cold joint or tooled cut or kerf to limit cracking.
Corkboard	Use TACKBOARD.
CUHION FILL	Aggregate fill under concrete slab on-grade to provide capillary break. (See also BASE COURSE).
DADO	A rectangular groove cut into a piece of wood. See also RABBET.
DAMPPROOFING	A coating intended to resist vapor transmission and dampness, but not designated to resist a head of water. See also VAPOR BARRIER.
DELETE	Something to be taken out by intention. For something to be left out, use OMIT.
DOWNSPOUT	A rain water conductor made of sheet metal or plastic. Do no use LEADER unless it is made of pipe or tubing.
DRAWING	Do not use “sheet”.
Drywall	Do not use; see GYPSUM BOARD.
Earth	Do not use; see SOIL.
EDGE BAND	A band of dissimilar material to edge another material. Not “self-edge”.
EDGE TRIM	Edge trim used for gypsum board construction. Do not use “casing bead”, “corner bead”, etc. Specification will define material to be used.
ELASTOMERIC	A material which is capable of being easily stretched or expanded and resuming former shape. Use in connection with sealant, flashing, membrane, etc.
EXPANSION BOLT	Single unit bolt with integral anchoring device, such as Wejit or Kwik Bolt. Do not use “anchor bolt” for these.
EXPANSION JOINT	A joint designed for movement, both expansive and contractive. Do not use to describe a CONSTRUCTION JOINT or a CONTRL JOINT.
EXPANSION SHIELD	Use for devices that receive a separate screw or bolt and also note type of screw or bolt. Do not use “anchor bolt” for these. Not “cinch anchor”.
Exterior Gypsum Board	There is no such product. See GYPSUM SHEATHING and GYPSUM SOFFIT BOARD.
EXTERIOR INSULATION FINISH SYSTEM (EFS)	Proprietary finish system consisting of a synthetic plaster applier over insulation board.
EXTERIOR FINISH SYSTEM (EFS)	Proprietary finish system consisting of a synthetic plaster applied over concrete, masonry, fiber cement board, or another substrate, other than insulation board.
FELT	Asphalt saturated felt. In built-up roofing, use PLY.
FIBER GLASS	Not “fiberglass” or “glass fiber”.
FIREPROOFING	Not “sprayed fireproofing”. Use for various coatings and coverings used to provide fire resistance to building components. Specifications will define material type and method of installation.
FIREPROOFING PLASTER	Not “vermiculite", “perlite”, etc.
FIRE SPRINKLER	Not “sprinkler”.
Flakeboard	Use PARTICLEBOARD.
FLOOR SINK	Use for sink recessed in floor. Not a floor drain. See also SERVICE SINK.
Formica	Use PLASTIC LAMINATE.
Free Access Floor	Use ACCESS FLOOR.
FURRED CEILING	Any ceiling attached to the floor or roof framing above by furring. See also SUSPENDED CEILING.
FURRING	Not “stripping”.
FURRING CHANNEL	Cold rolled steel channel for furring plaster. See also RUNNER. For hat-shaped 25 gage steel channels for gypsum board, see METAL FURRING.
GAGE	Not “gauge” or “guage”.

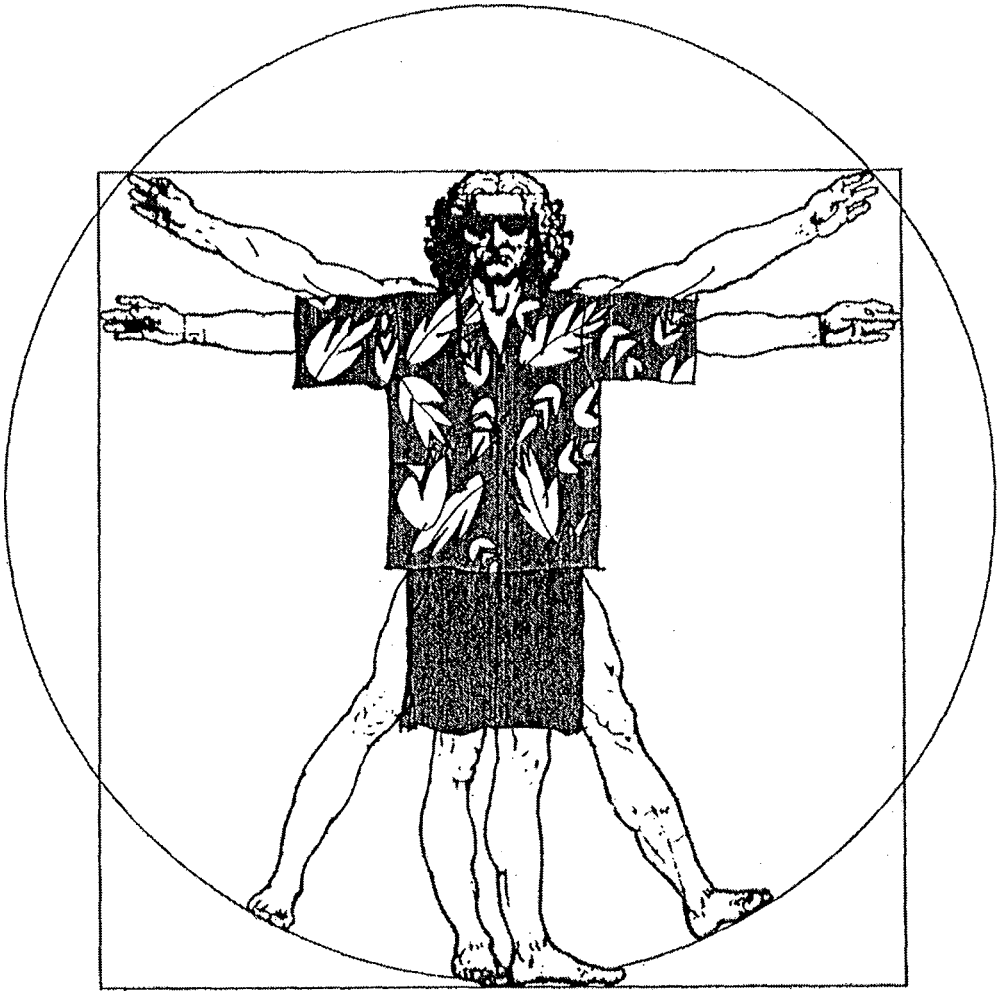
GLASS STOP	Not “glazing bead”.
GLAZED OPENING	Used at interior partitions. Not “borrow light”, “relite”, or “vision panel”.
GLAZED TILE	Any ceramic tile having a glaze regardless of size. **CERAMIC TILE** is preferred generic term for drawing use. See also **CERAMIC TILE, CERAMI MOSAIC TILE, PAVER TILE**, and **QUARRY TILE**.
Glue	See **ADHESIVE**.
GROOVE	A long, narrow indentation. See also **DADO** and **RABBET**.
GROUT	Any cementitious material used to fill, level or set other materials. Do not use “sulphur”, “por-rok”, etc. to describe such materials.
GUARDRAIL	Protective type railing having a code required height of 3’-6’ or more. See also **HANDRAIL** and **RAILING**.
GYPSUM BOARD	Use for wall and ceiling finish material. Do not use “dry-wall” or “wallboard”.
GYPSUM SHEATHING	A gypsum panel sheathing material. Must be protected from exposure to weather. Often used to increase fire resistance of wood frame construction and as a base for **EXTERIOR INSULATION FINISH SYSTEM**.
GYPSUM SOFFIT BOARD	Gypsum panel product intended for protected exterior soffits. Also referred to as Exterior Gypsum Ceiling Board.
HANDRAIL	Use for a single rail, used for grasping with the hand as a support on a stairs, ramp, or in a corridor or elevator. May be wall-mounted, floor-mounted, or mounted on a railing. See also **GUARDRAIL** and **RAILING**.
HANGER	And suspended structural member by which other members are attached.
HARDBOARD	Use instead of “pressed wood”, “masonite", etc. For flake type boards, use **PARTICLEBOARD**.
HARDWOOD	Not specific species. Wood broad-leafed evergreen or deciduous trees. See also **WOOD** for softwood.
Hat Channel	Use **METAL FURRING** and detail “hat” shape.
HOISTWAY	Use for elevators and dumbwaiters. Not “shaft”.
HOISTWAY BEAM	Beams supporting guide rails between multiple hoistways. Not “separator beam”.
HOLLOW METAL	Use to describe hollow metal doors and panels. Do not use for extruded shapes. For pressed metal frames see **METAL FRAME.**
INSTALL	Use instead of “apply”, “lay”, “hang”, “place”, etc. For “furnish and install”, use **PROVIDE.**
INSULATING CONCERTE	Not “vermiculite concrete’, “foam concrete”, etc. Do not use for other **LIGHTWEIGHT CONCRETE** which is not intended to provide insulation.
JOINT BACKER	Material behind sealant. Not “form”, “rod”, etc. Generally shown on drawings but not noted.
JOINT FILLER	Material which fills entire joint. Not “bituminous filler”, “fiber filler”, etc. May also be used with sealant.
Kick Space	Use **TOE SPACE**.
Laminated Plastic	Use **PLASTIC LAMINATE**.
LANDSCAPE IRRIGATION	Not “sprinkler”.
LEADER	A rain water conductor made of pipe or tubing. See also **DOWNSPOUT**.
Leader Head or Box	Use **CONDUCTOR HEAD**.
LIGHTWEIGHT CONCRETE	Concrete of lightweight aggregates not designed to provide insulation. See **INSULATING CONCRETE.**
Masonite	Use **HARDBOARD**.

Mastic	Do not use. Use ADHESIVE or SEALANT.
METAL FRAME	Pressed Metal Frames used with doors and panels or glazed openings.
METAL LATH	Hat-shaped, 25 gage steel channels used for furring out gypsum board walls and ceilings. For cold rolled steel channels for plaster, see FURRING CHANNEL and RUNNER CHANNEL.
METAL STUD	Not “diamond mesh”, “chicken wire”, etc.
Metal Trim	Not “screw stud”, “C stud”, etc.
Moisture Barrier	Use EDGE TRIM for gypsum board, see CASING BEAD also.
MORTAR	Use DAMPPROOFING or VAPOR BARRIERE.
OMIT	Cementitious mixture, sometimes modified with epoxy, used for setting tile and masonry.
OPTION	To leave out by intention. See also DELETE.
PANELING	Use when there is a Contractor’s choice. See also ALTERNATE.
PANELS	Sheet or board material for exposed interior use.
PARTICLEBOARD	Not “chipboard” or “Novoply”. See also HARDBOARD.
PARTITION	Non-loadbearing vertical panel subdividing interior spaces, either rated or not-rated. See WALL for exterior, occupancy separation, area separation, and loadbearing conditions.
PATCH	Replacement or repair of material or finish to match existing conditions.
PAVER TILE	Any unglazed porcelain or natural clay tile formed by the dust-pressed method and 6 sq.in. or more in facial area. See also CERAMIC TILE, CERAMIC MOSAIC TILE, GLAZED TILE and QUARRY TILE.
Pedestal Floor	Use ACCESS FLOOR.
PLASTER	Specifications define type, i.e. gypsum plaster, Keene’s Cement, etc. At exterior, use CEMENT PLASTER.
Plaster Stop	Use CASING BEAD.
PLASTIC CEMENT	Bituminous, fibered adhesive.
PLASTIC LAMINATE	Not “formica” or “laminated plastic”.
Plastic Membrane	Use DAMPPROOFING. Not “Visquee”. See also VAPOR BARRIER.
PLY	Asphalt saturated felt used in built-up roofing.
PLYWOOD	If several types of plywood are used within a drawing, coordinate with specifications and identify consistently.
PRECAST CONCRETE PANEL	Not “exposed aggregate panels”, “architectural precast”, “Mo Sai panels”, etc.
PROTECTION BOARDS	Board used to protect substrate during construction. Used in conjunction with waterproofing and roofing.
PROVIDE	Denotes “Furnish and Install”, not “supply”, “deliver”, “erect”, etc.
QUARRY TILE	Any unglazed natural clay tile formed by the extrusion process and 6 sq.in. or more in facial area. See also CERAMIC TILE, CERAMIC MOSAIC TILE, GLAZED TILE, and PAVER TILE.
RABBET	Groove at edge of member only. See also DADO and GROOVE.

RAILING	A general term for a framework of vertical, horizontal, or inclined members or panels, sometimes supporting a handrail, sometimes acting as a guardrail, or both. See also **GUARDRAIL** and **HANDRAIL**.
Rainwater Leader	Use **LEADER** if made out of pipe or tubing. Use **DOWNSPOUT** if made of sheet metal or plastic.
Rebate	Use **RABBET**.
RECORD DRAWING	Drawings revised to include construction changes. Do not use "As-Built Drawings" unless referring to such drawings prepared by the Contractor.
REFINISH	To put a finish back into its original condition. Do not use "refurbish", "rehabilitate", "remodel", "renew" or "renovate".
RELOCATE	To move from one location and install in another location.
Remodel	Use **ALTER** or **ALTERATION**.
REPLACE	To provide a substitute, or equivalent for. Do not use for "Reinstall".
RESILIENT BASE	Not "rubber base", "vinyl base", etc.
RESILIENT FLOORING	See also **RESILIENT TILE, RESILIENT SHEET** and **SEAMLESS FLOORING**.
RESILIENT SHEET	Resilient flooring installed in lengths, generally wall to wall with joints depending upon manufactured widths of roll material.
RESILIENT TILE	Not "vinyl tile", "VCT", "linoleum", etc.
RIGID INSULATION	Not "fiberboard", "board insulations", "cellular insulation", etc.
ROOF HATCH	Not "scuttle". If specifically for venting smoke indicate **SMOKE VENT**.
RUNNER (TRACK)	Unpunched metal stud channel usually occurring at base and top of metal stud assemblies.
SCREED	Metal or wood strip placed at intervals to gage thickness of applied materials.
SCRIBLE STRIP	Strip to make tight closure to adjoining surfaces. Not "filler".
SEALANT	Generic term for non-elastomeric and for elastomeric materials use at joints subject to movement or weather penetration outdoors or indoors. Specifications will define specific product locations. If purpose is acoustical, use **ACOUSTICAL SEALANT**.
SEAMLESS FLOORING	Fluid or trowel-applied flooring without aggregates.
SECTION	Drawing showing cut through an object. Not a rolled steel shape.
SELF-EDGE	Edge plywood or particleboard with same materials as face surface. Not "edge band".
Separator Beams	Use **HOISTWAY BEAMS**.
SERVICE SINK	Wall or floor mounted sink. Not "janitor's sink" or "slop sink". See also **FLOOR SINK**.
SHEATHING	Not "sheeting", "diaphragm", or "plyscore".
SHEET	Thin construction material. Not a drawing.
SHEET METAL	Use general term on drawings. Specification should define particulars.
SKIMCOAT PLASTER	A thin, one coat cement plaster finish, not more than 1/8" thick, over concrete or masonry. Not to be confused with **VENNER PLASTER** or a two coat plaster finish consisting of a base or leveling coat and finish coat on concrete or masonry. See also **PLASTER**.
SMOKE VENT	Use for **ROOF HATCH** or **SKYLIGHT** specifically designed for venting smoke.
SOIL	Not "earth", "dirt", etc.
Sound Calking	Use **ACOUSTICAL SEALANT**.

SOUND DEADENING BOARD	High density wall board, wood fiber or gypsum, not suitable for painting or finishing.
SOUND RETARDANT	Not “soundproof”.
Sprayed Fireproofing	Use **FIREPROOFING.**
Sprinkler	Do not use. See **FIRE SPRINKLER** or **LANDSCAPE IRRIGATION.**
STEEL JOISTS	Do not use “open-web joists” or “bar joists”.
STOCK	Raw material i.e. 2 x 4 stock, or commonly used and readily available materials.
STONE	Not “granite”, “slate”, “marble”, etc. Specifications should define type, quality, and other attributes.
Stripping	Use **FURRING.**
Stucco	Use **CEMENT PLASTER.**
SUBFLOORING	Usually of different grade and thickness than used for wall or roof sheathing. Not “sheathing” or “subfloor”.
SUSPENDED CEILING	Any ceiling hung from floor or roof framing above by wires or straps.
TACKBOARD	Not “bulletin board” or “corkboard”.
THRU	Acceptable short version of **THROUGH** on drawings only.
TILE BACKER BOARD	Preferred generic term for any rigid backing board used to apply stone on ceramic tile; specifications will define whether product is water resistant gypsum board, glass mesh mortar board, fiber cement board, or other. If more than one type is utilized on a project, devise a way to define the extent of each on the drawings.
TOE BOARD	Raised protective edge at balconies, landings, etc. (OSHA requirement)
TOE SPACE	Recess at base of cabinets. Not “kick space”.
TOGGLE BOLT	Do not use “Butterfly” or “Molly Bolt”.
Topsoil	Do not use. See **SOIL.**
Transite	Use **MINERAL FIBER.**
TRAFFIC COATING	Surface applied waterproofing and elastomeric and composition type membrane exposed to weather and suitable for light pedestrian and vehicular traffic, but not intended for heavy industrial use.
TYPICAL	Representative example, characteristic of a kind.
UNDERLAY	Roofing felt applied over sheathing before shingling.
UNDERLAYMENT	A smooth, hard sheet material, placed over rougher substrates to achieve a surface suitable for the application of such finishes as resilient tile. Not “underlay”.
VAPOR BARRIER	Not “sub-slab dampproofing”, “visqueen”, “plastic film”, “waterproofing”, etc.
WAINSCOT	Finish on the lower part of a partition when it differs from that of the upper part.
WALL	Vertical panel which encloses a building, or serves as an occupancy or area separation, either load bearing or non-load bearing. Also an interior load bearing vertical panel. i.e.: exterior **WALL**, occupancy separation **WALL**, area separation **WALL**, interior bearing **WALL**. See also **PARTITION**.
WATERPROOFING	Designed to resist a head of water. Not “membrane”, “dampproofing” or “waterproof”.
WOOD	Use only for solid stock softwoods. See also **HARDWOOD**.

GUIDE TO PRODUCTION PROCEDURES



HONOLULU CHAPTER
The AMERICAN INSTITUTE OF ARCHITECTS

Guide to Production Procedures

HONOLULU CHAPTER
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HONOLULU CHAPTER/MA
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INTRODUCTION

This second edition of the Honolulu Chapter's Guide to Production Procedures is founded on the premise that design is what distinguishes architecture from shelter or buildings, and that architects document their designs for construction by others.

The 1990 Production Procedures Task Force was equally concerned that this documentation process was, in reality, information management - obtaining timely decisions and recording them for use *by* others. This, coupled with the increasing use of computers in our practice and their inherent ability to sort and display information in a variety of formats, led to the realization that techniques developed in the late '70s and early Ws to document multiple attributes related to a single element, a door for example, were now subject to reexamination,

Previous door schedules were either groups of door specific attributes or an attempt to group doors with like attributes into a single designation so that they could be modified as the project developed without creating massive corrections, This same information can now be easily displayed on an opening specific basis.using a data base or CADD computer program.

Our assessment of the 1981 Guide to Production Procedures led to the conclusion that there were several appropriate methods *by* which designs could be documented. Where possible, we have suggested alternatives. The selection of a specific format will be dependent upon several variables including project scope, scale, computer capability and office policy.
Use this manual as intended - as a guide. Refine its suggestions to fit the nuances of your specific project, remembering that your documents serve as more than a vehicle to communicate your design decisions to those constructing the building. These documents must satisfy the special interests of others including consultants, specification writers, estimators, checkers, contractors, jurisdictional agencies, funding sources, users, and unfortunately, lawyers on occasion. They should be simple, economical to prepare, and should embody characteristics that will satisfy the majority of its users.

CONTENTS

2 Abbreviations

"When in doubt, spell it out?

RECOMMENDATIONS

Abbreviations should meet the tests of applicability, clarity, economy, efficiency and necessity.

Abbreviations should be easily recognized or self-reading. Abbreviations should only be used where there can be no misinterpretation of intent or meaning. Archaic terminology should be eliminated and new terms added when they pass all of the above tests.

Abbreviations in titles should be avoided. Words which occur only once or twice in a construction document should be spelled out, i.e. benchmark. There should be no periods used in abbreviations.

Words of four letters or less should not be abbreviated except those accepted through longstanding usage, i.e. BM = Beam or EA = Each.

On drawings, abbreviations should be listed in alphabetical order by the abbreviations, not by the complete word.

&	And
∠	Angle
@	At
℄	Centerline
	Channel
ø	Diameter; Round
‘	Foot; Feet
“	Inch
%	Percent
⊥	Perpendicular
#	Pound; Number
ℙ	Property Line
⌑	Square Foot

A/C	Air Conditioning
AB	Anchor Bolt
ABV	Above
AC	Asphaltic Concrete; Asphaltic Paving
ACOUS	Acoustical
AD	Area Drain
ADD	Addendum
ADJ	Adjustable
ADJA	Adjacent
AF AFF	Access Flooring (Raised)
AGGR	Above Finished Floor
AL ALT	Aggregate
ANOD	Aluminum Alter;
AP	Alternate
APPROX	Anodized
ARCH	Access Panel
AT	Approximate
	Architectural
	Acoustical Tile

BD	Board
BLDG	Building
BLK	Block
BLKG	Blocking
BM	Beam
BOH	Back of House
BOT	Bottom
BR	Bedroom
BRAS	Brass
BRG	Bearing
BRKT	Bracket
BS	Both Sides
BSMT	Basement
BTWN	Between
BUR	Built-Up Roofing

CAB	Cabinet
CB	Catch Basin
CEM	Cement
CEM PLAS	Cement Plaster

CER	Ceramic
CG	Corner Guard
CI	Cast Iron
CIP	Cast-In-Place
CJ	Control Joint
CL	Centerline
CLG	Ceiling
CLO	Closet
CLR	Clear
CMU	Concrete Masonry Units
CNTR	Counter
CO	Cased Opening; Cleanout
COL	Column
COMP	Compartment
CONC	Concrete
COND	Condition
CONN	Connection
CONSTR	Construction
CONT	Continuous
CONTR	Contractor
COORD	Coordinate
COP	Copper
CORR	Corridor
CPT	Carpet
CRM	Concrete Rubble Masonry
CT	Ceramic Tile
CTR	Center
CTSK	Countersink
CULT	Cultured
CW	Cold Water
D	Deep; Depth; Dryer
DA	Double Acting
DBL	Double
DD	Deck Drain
DEPT	Department
DET	Detail
DF	Drinking Fountain
DIA	Diameter
DIAG	Diagonal
DIM	Dimension
DISP	Dispenser
DN	Down
DO	Door Opening
DPTN	Demountable Partition
DR	Door
DS	Downspout
DSP	Dry Standpipe
DW	Dishwasher
DWG	Drawing
DWR	Drawer
(E)	Existing
E	East
EA	Each
EC	Elastomeric Coating; Exposed Construction
EFS	Exterior Finish System
EIFS	Exterior Insulation Finish System
EJ	Expansion Joint
EL	Elevation
ELAS	Elastomeric
ELEC	Electrical
ELEV	Elevator
EMER	Emergency
ENCL	Enclosure
EOS	Edge of Slab
EP	Electrical Panelboard
EQ	Equal
EQPT	Equipment
EW	Each Way
EWC	Electric Water Cooler
EXH	Exhaust
EXP	Expansion
EXPO	Exposed
EXT	Exterior
F	Female
FA	Fire Alarm
FAB	Fabricate
FB	Flat Bar
FCU	Fan Coil Unit
FD	Floor Drain
FDN	Foundation
FE	Fire Extinguisher
FEC	Fire Extinguisher/Cabinet
FF&E	Furniture, Fixture & Equipment
FHC	Fire Hose/Cabinet
FIN	Finish
FIXT	Fixture
FL	Floor
FLASH	Flashing
FLDG	Folding
FLG	Flooring
FLUOR	Fluorescent
FOC	Face of Concrete
FOF	Face of Finish
FOM	Face of Masonry
FOS	Face of Studs; Slab; Structure
FOW	Face of Wall
FR	Frame
FRP	Fiberglass Reinforced Polyester Panel
FRT	Fire Retardant Treated
FRZ	Freezer
FS	Floor Sink
FT	Foot; Feet
FTD	Facial Tissue Dispenser
FTG	Footing
FURR	Furring; Furred
FUT	Future

GA	Gage
GALV	Galvanized
GB	Grab Bar
GFRC	Glass Fiber Reinforced Concrete
GL	Glass
GLU-LAM	Glu-Laminated Wood
GND	Ground
GR	Grade
GRN	Granite
GS	Gypsum Sheating
GSB	Gypsum Sheathing Board
GWB	Gypsum Wallboard
GYP	Gypsum
H	High
HB	Hose Bibb
HC	Hollow Core
HD	Head
HDCP	Handicapped
HDWD	Hardwood
HDWE	Hardware
HM	Hollow Metal
HORIZ	Horizontal
HR	Hour
HS	Hand Sink
HT	Height
HVAC	Heating, Ventilation and Air Conditioning
HW	Hot Water
ID	Inside Diameter (Dimension)
IN	Inch
INCL	Inclusive; Included; Including
INSUL	Insulation
INT	Interior
INTEG	Integrated
INV	Invert
JAL	Jalousie
JAN	Janitor
JB	Junction Box
JC	Janitor's Closet
JST	Joist
JT	Joint
KD	Knock Down
KIT	Kitchen
KO	Knock-Out
L	Length; Long
LAB	Laboratory
LAM	Laminate; Laminated
LAV	Lavatory
LB	Pound
LDG	Landing
LF	Lineal Foot
LH	Left Hand
LIQ	Liquor
LKR	Locker
LOC	Location
LR	Living Room
LT	Light
LVR	Louver
M	Male
MAR	Marble
MAS	Masonry
MAX	Maximum
MB	Machine Bolt
MBR	Master Bedroom
MC	Medicine Cabinet
MECH	Mechanical
MEMB	Membrane
MET	Metal
MFR	Manufacturer
MH	Manhole
MIR	Mirror
MISC	Miscellaneous
MLDG	Moulding; Molding
MO	Masonry Opening
MOD	Modular
MR	Moisture Resistant
MTD	Mounted
MTG	Mounting
MTL	Material
MUL	Mullion
MUN	Muntin
N	North
NIC	Not in Contract
NO	Number
NOM	Nominal
NTS	Not to Scale
OA	Overall
OBS	Obscure
OC	On Center
OD	Outside Diameter (Dimension)
OFCI	Owner Furnished Contractor Installed
OFD	Overflow Drain
OFF	Office
OFOI	Owner Furnished
OH	Overhang
OI	Owner Installed
OPNG	Opening
OPP	Opposite

OPP HAND	Opposite Hand
OPR	Operable
OVHD	Overhead
PA	Public Address System
PASS	Passage
PC	Piece; Post Contract
PD	Planter Drain
PERIM	Perimeter
PH	Penthouse
PL	Plate; Property Line
PLAM	Plastic Laminate
PLAS	Plaster
PLBG	Plumbing
PLYWD	Plywood
PNL	Panel
PR	Pair
PRCST	Precast
PREFAB	Prefabricate
PREP	Preparation
PROP	Property
PSF	Pounds per Square Foot
PT	Point; Paint
PTD	Paper Towel Dispenser; Painted
PTDR	Paper Towel Dispenser & Waste Receptacle
PTN	Partition
PTR	Paper Towel Receptable
PVC	Polyvinyl Chloride
PVMT	Pavement
QT	Quarry Tile
R	Radius; Riser
RB	Resilient Base
RD	Roof Drain
REBAR	Reinforcing Bar
REF	Reference
REFL	Reflected
REFR	Refrigerator
REINF	Reinforced; Reinforcing
REQ	Required
RESIL	Resilient
REST	Restroom
REV	Revised; Revision
RF	Roof; Resilient Flooring
RF	Resilient Flooring
RFG	Roofing
RGH	Rough
RGTR	Register
RH	Robe Hook; Right Hand
RLG	Railing
RM	Room
RND	Round
RO	Rough Opening
RWC	Rain Water Conductor
RWD	Redwood
RWL	Rain Water Leader
S	South
SA	Single Acting
SC	Scale; Solid Core
SCD	Seat Cover Dispenser
SCHED	Schedule
SCP	Scupper
SCR	Screen
SCR	Shower Curtain Rod
SD	Smoke Detector; Soap Dispenser
SDISH	Soap Dish
SECT	Section
SF	Square Foot
SH	Shelf
SHR	Shower
SHT	Sheet
SHTG	Sheathing
SIM	Similar
SL	Slope
SLDG	Sliding
SLNT	Sealant
SM	Sheet Metal
SND	Sanitary Napkin Dispenser
SNR	Sanitary Napkin Receptacle
SP	Space
SPEC	Specification
SPKR	Speaker
SPRK	Sprinkler
SQ	Square
SSK	Service Sink
SST	Stainless Steel
ST	Stone
STA	Station
STD	Standard
STL	Steel
STN	Stain
STOR	Storage
STRL	Structural
STRUC	Structure
SURR	Surround
SUSP	Suspended
SVC	Service
SW	Switch
SYM	Symmetrical
SYS	System
T&G	Tongue and Groove
TACKBD	Tackboard
TB	Towel Bar
TBB	Tile Backer Board
TD	Trench Drain

TEL	Telephone
TEMP	Tempered; Temporary
TER	Terrazzo
THK	Thick; Thickness
THR	Threshold
THRU	Through
TLT	Toilet
TO( )	Top of (Item)
TOC	Top of Curb
TOP	Top of Pavement
TOS	Top of Slab
TOW	Top of Wall
TPD	Toilet Paper Dispenser
TPH	Toilet Paper Holder
TPT	Textured Paint
TRAN	Transition
TRD	Tread
TS	Towel Shelf
TV	Television
TYP	Typical
UC	Undercut
UL	Underwriters Laboratory
UNF	Unfinished
UON	Unless Otherwise Noted
UR	Urinal
VAL	Valance
VAR	Varies
VERT	Vertical
VEST	Vestibule
VOL	Volume
VP	Veneer Plaster
VTR	Vent Through Roof
W	Washer; Wide; Width; West
W/	With
W/O	With Out
WC	Wallcovering; Water Closet
WD	Wood
WDW	Window
WGL	Wire Glass
WH	Water Heater
WO	Where Occurs
WP	Waterproofing
WP MEMB	Waterproof Membrane
WR	Water Resistant
WRB	Wardrobe
WSCT	Wainscot
WSP	Wet Stand Pipe
WT	Weight
WWF	Welded Wire Fabric

3 Symbols

RECOMMENDATIONS

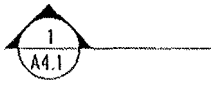
There are four main criteria for the creation and use of symbols:

Symbols should be readily discernible.

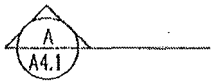
Each type should be unique.

Symbols should be simply produced.

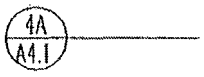
Preferences should be given to the adoption of symbol types readily recognized because of their common usage



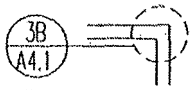
BUILDING SECTION
USE SYMBOL AT BOTH ENDS OF CUT
(5/8" DIA)



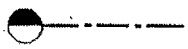
WALL OR DETAIL SECTION (5/8" DIA)



DETAIL
(5/8" DIA)



DETAIL
ALTERNATE
(5/8" DIA)

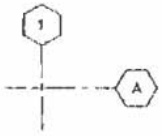


MATCH LINE
SHADED PORTION IS THE SIDE CONSIDERED
(1/2" DIA)

WORKING POINT, CONTROL POINT OR DATUM POINT
(3/8" DIA)

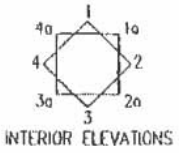
NEW POINT ELEVATION
(1/4" X 5/8 BOX)

EXISTING POINT ELEVATION



COLUMN GRIDS
(3/8"HEX)

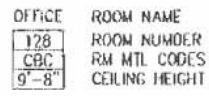
EXTERIOR ELEVATIONS
REFERENCE ON PLAN
(5/8" DIA)



INTERIOR ELEVATIONS
REFERENCE ON PLANS
(5/8" SQ)

NORTH POINT
(5/8" DIA)

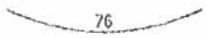
ROOM INDENTIFICATION
(1/4 X 5/8" BOX)



ROOM IDENTIFICATION
(3/4" X 5/8" BOX)
ROOM MATERIAL CODES
1ST LETTER – FLOOR/BASE
2ND LETTER – WALLS/WAINSCOT
3RD LETTER – CEILING

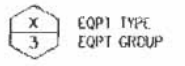
PARTITION TYPE
(3/8" DIA)

PROPERTY LINE



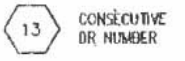
NEW CONTOURS

EXISTING CONTOURS



EQUIPMENT TYPE
(5/8"HEX)

DOOR MARK
(5/8"HEX)



DOOR MARK
SMALL PROJECTS
(5/8"HEX)

WINDOW MARK
(1/2" DIAMOND)

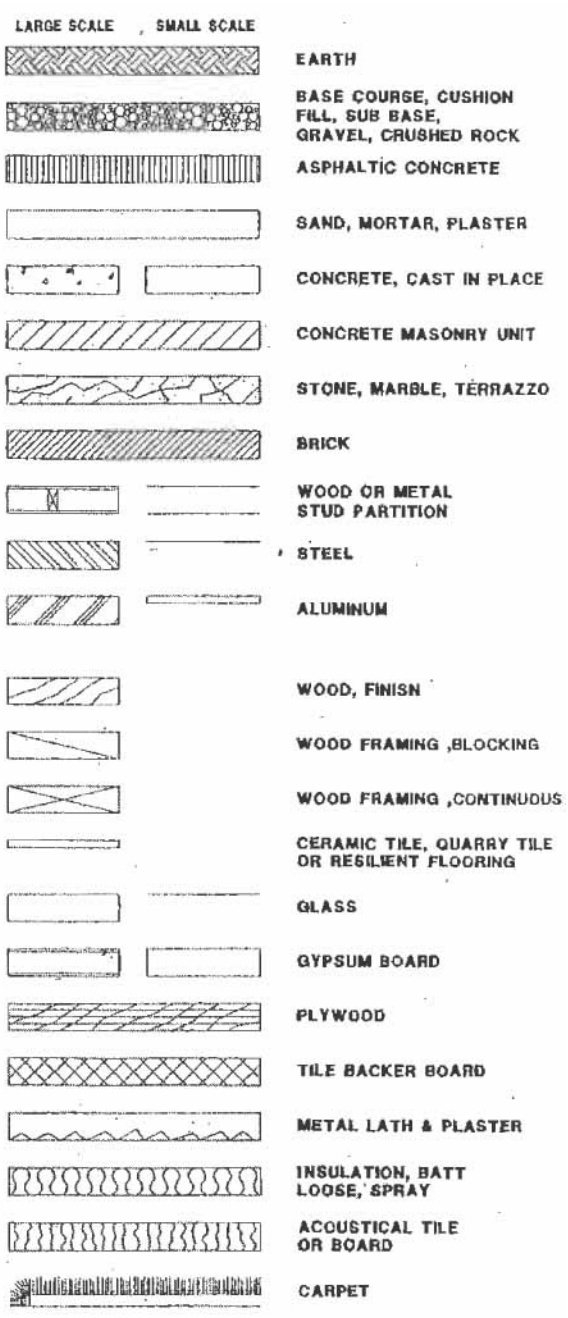
LOUVER MARK
(1/2" DIAMOND)

KEYNOTE MARK
(1/2" ELLIPSE)

REVISION
CLOUD OPTIONAL
(1/2" TRIANGLE)

4

Material Indications



Indication of materials is a necessary part of detailed drawing. Patterns make the extent and relationship between various materials readily discernable. The particular pattern used to represent a certain material should be uniform throughout a set of drawings, and preferably throughout the profession for indications of materials commonly used.

RECOMMENDATIONS

The recommended material indications shown on the right have been limited to the ones most generally used. When indications are required for additional materials, it is recommended that they be developed within the following guidelines:

Make indications freehand whenever practical.

Draw indications with appropriate scale, keeping in mind that reproduction processes which reduce size will tend to merge close lines and also lose light lines or dots.

Indications should consist of lines and dots, without any overall tone, shading, or poche. (Some reproduction methods print only the edges of an evenly shaded area).

Show indications only adjacent to extremities or juncture with other materials, as necessary for clear definition. it is not necessary to fill the entire cut section with the pattern.

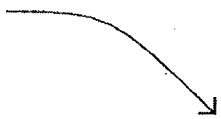
Show indications on the face of the drawings. (Some reproduction methods copy only the face.) Do not poche on the back of the sheet.

5 Lettering & Line Weight

LETTERING

Clarity and readability are the keys to easier reading of construction documents. For uniformity of construction documents, it is desirable to have uniform lettering. Keep your lettering "uniform, simple and legible..."

Notations should be connected to an item with a simple line ending in a plain, free-handed arrow.



LETTERING RECOMMENDATIONS

All lettering should be plain, block upper case, with the following exception: lower case letters can be appended to items such as door marks (101a, 101b, etc) to denote multiple doors in a room, or to partition types (1Ar, 3Cr, etc.) where the “r” indicates the rated version of a basic partition.

Increase the size of letters if the drawings are to be reduced.

Spaces between letters or between lines of lettering should be adequate to result in clear reduced drawings.

There should be no underlining of the text.

LINE WEIGHT

The old adage that lines should be "light", "medium" or "dark" is obsolete as most production techniques will not distinguish between "light" and "dark" line work. Clarity is achieved by line work that is dense.

All line work should be equally opaque. Line weights are achieved by varying their width. This will result in the clean, clear line work required in construction documents.

LINE WEIGHT RECOMMENDATIONS

Thin weight lines for: Column and other grids; dimension lines; surface marks and material indications (wood grain, marble veining, etc.).

Medium weight lines for: Construction features when seen from above or in elevation (slab edges, planter walls, curbs, etc.).

Thick weight lines for: Edges of construction being cut through in section; text; symbols and lettering; outermost lines on exterior and interior elevations.

6 Dimensioning

RECOMMENDATIONS

Dimensioning should start with critical dimensions as predicated by design or other requirements.

Dimensioning should take into consideration the trades using them and the sequencing of their respective work.

Dimensioning from established grids or structural elements, such as columns and structural walls, assists the trades to properly locate items which are placed. prior to partitions.

When dimensioning, bear in mind that tolerances in actual construction can vary. Dimensions as actually built may not coincide with design dimensions.

In local practice, the architectural dimensions control.

INDICATIONS

All numbers should be at least 1/8" high.

Indicate fractions with a diagonal dividing line between numerator and denominator. Do not precede fractions with, a zero. •

Express dimensions under 1'-0", i.e. 11", 6", in inches. Express dimensions l'-O" and over in feet and inches.

Indicate dimension points with a short blunt 45 degree line oriented the same for vertical and horizontal runs of dimensions.

Limit fractional dimensions in plans and elevations to increments of 1/8", except for indication of a single material thickness.

Space dimension lines and dimensions so as not to conflict with other drawing information. Always place the dimension above the line.

In a series of equal- spaces, indicate "equal" rather than the dimension. For example, if three equal divisions are required in a 12'40" space, note it as 3 equal spaces, not two 4'-0" dimensions and one undimensioned space or three 4'-0" dimensions.

G E N E R A L

Dimension sparingly.

Dimension items from an established grid or reference point. Do not close the string of dimensions to the next grid or reference point.

Dimension wherever possible from structural elements. Other items may not yet be installed when the plumber and electrician lay out sleeves on the forms for the floor deck.

When a clear dimension is required by code or other reason, dimension to the finish faces and note "FOE". Do not use the word "clear".

Use nominal dimensions for masonry. Where necessary to dimension masonry openings, use nominal dimensions and note as "MO". Use exact dimensions of masonry only on large scale details and only when block thicknesss is critical to detail.

Do not dimension to Match Lines.

SITE PLAN DIMENSIONS

In most cases locate the building by indicating location of only one corner, column intersection or other appropriate point and the bearing of one side. Other building dimensions are determined from the architectural and structural floor plans.

Indicate other dimensions appropriate to site plan such as side yards, building separations, etc.

Some building configurations may requite locating all corners and sides of the buildings.

FLOOR PLAN DIMENSIONS

Wherever possible, dimension to centerlines of columns or other grid points.

Dimension to face of concrete and masonry, and to the critical face of studs ("FOS"): Where more than one dimension is taken to a partition, always dimension to a common face.

Do not dimension items, such as partitions or doors, that are centered or otherwise located on a grid, module, mullion, by 'schedule or by typical detail condition. General notes or typical details should cover this and 'other typical dimensioning conditions. .

DO not dimension stud partitions or masonry thicknesses.

Where portions of a plan are enlarged; dimension items within the perimeter only on the detail plan.

Avoid repetition of dimensions for the same area or condition.

Dimension furred spaces from face to face or from a structural point to finish face.

Dimension moveable partitions to center line.

Dimension cased openings without frames to face of finish.

VERTICAL DIMENSIONS

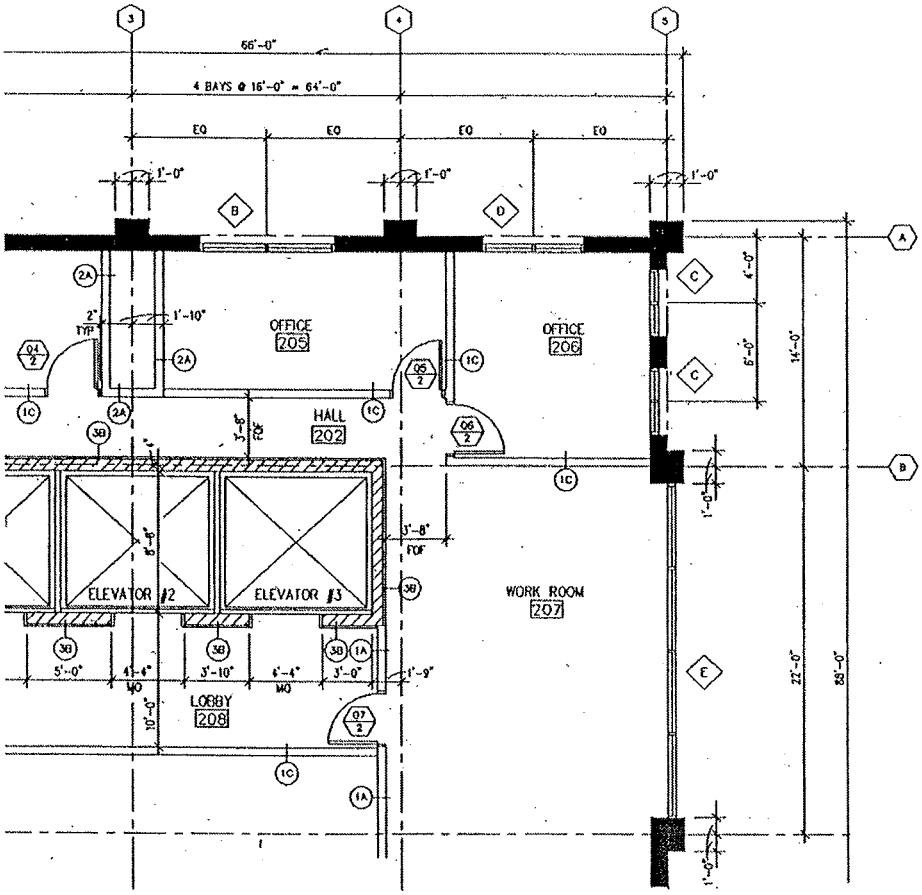
Indicate elevations in feet and inches using elevation OA" for the first floor instead of actual datum elevation. This will simplify changes should datum elevations vary during The course of developing the working drawings. Exception: For high-rise buildings bounded by city streets with fixed curb elevations, use of actual datum elevation for first floor may be preferable.

Give roof elevations to the structural roof surface.

Architectural and structural drawings should always use the same notation system.

Typically show two lines of-dimensions: 1) Outside line to show dimension from finished first floor to top of parapet or roof structure; 2) Inside line to show floor to floor dimensions, top floor to roof structure, and roof structure to top of parapet.

Show horizontal dimensions on vertical sections and elevations only when they do not show on plans or details. •



GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF STUD, CMU OR CONCRETE UNLESS OTHERWISE NOTED.
2. SEE ROOM FINISH SCHEDULE, CHAPTER 7, FOR TYPICAL ROOM FINISHES.
3. SEE DOOR SCHEDULE, CHAPTE 7, FOR DOOR SIZES, TYPES AND CONSTRUCTION.
4. SEE PARTITION TYPES, CHAPTER 8, FOR TYPICAL WALL CONSTRUCIICAN.

7 Notation Shortcuts & Keynoting

GENERAL

Drawings show the form, quantity,-and relationship of the construction materials, while specifications establish the quality of materials and workmanship.

It is important that drawing data he clear, concise and not overlap with information given in the specifications. Too many notations obscure the draWings, increase search time for finding vital information, and increase the possibility for inconsistencies and duplications.

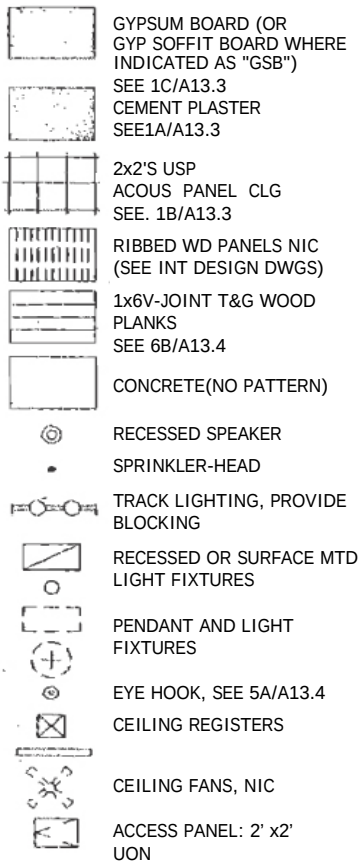
Drawings should identify, but not describe a material or component. For example, a four-ply built-up,roof with gravel surfacing should be noted as "roof membrane", "built-up roofing", or "roofing type x", where "x" identifies a specific system described in the specificatkins...

Proprietary. names should be avoided on drawings.

NOTATION SHORTCUTS

A clear, quick way to note repetitive materials and. details - especially on floor, paving or reflected ceiling plans - is to prepare a legend showing patterns or special designations (such as 'types of corner guards, control joints, etc.) that calls out their detail references or definitions.

CEILING PLAN LEGEND:



Creating legends for instructions that require frequent repetition, such as demolition or repair notes, can also keep drawings from becoming cluttered.

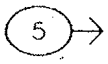
DEMOLITION NOTES

A.	EXISTING WALL/STRUCTURE TO REMAIN.
B.	EXISTING WALL TO BE DEMOLISHED.
C.	REMOVE & SALVAGE DOOR, FRAME TO REMAIN.
D.	RELOCATE DOOR, REMOVE FRAME & TRIM.
E.	REMOVE EXISTING EXTERIOR STAIR.
F.	REMOVE EXISTING DRY STANDPIPE.

KEYNOTES

Keynoting is a time-saving system of calling out major material names, primarily on exterior and interior elevations, building and wall sections. It consists of:

Keynote symbols placed on the body of the drawing.



An accompanying list of material names to define each number.

MATERIAL INDICATIONS

1 ASPHALTIC CONCRETE

2 WOOD TRELLIS

3 WOOD BOARD SIDING

4 BATT INSULATION

5 CLAY TILE ROOFING

RECOMMENDATIONS

Keynotes lists should contain only major materials which need to be referenced many times. Keep descriptions as general as possible.

Keynotes lists should have 20-25 entries, maximum. As interior materials differ from exterior ones, consider making one list for interior elevations and another for exterior elevations, building sections and wall sections.

Write conventional note references for minor materials, or ones which show up infrequently:

Do not include materials whose installation will be depicted in details (i.e. cant strip, reglet, backer rod, sealant). This is redundant and an inappropriate level of detail for elevations and sections.

Do not use keynotes to describe the construction of partitions that appear in wall sections. Refer to.them by their partition symbol and number, if necessary.

Keynotes lists and legends' should appear on every drawing that contains references to them.

8 Sheet Design

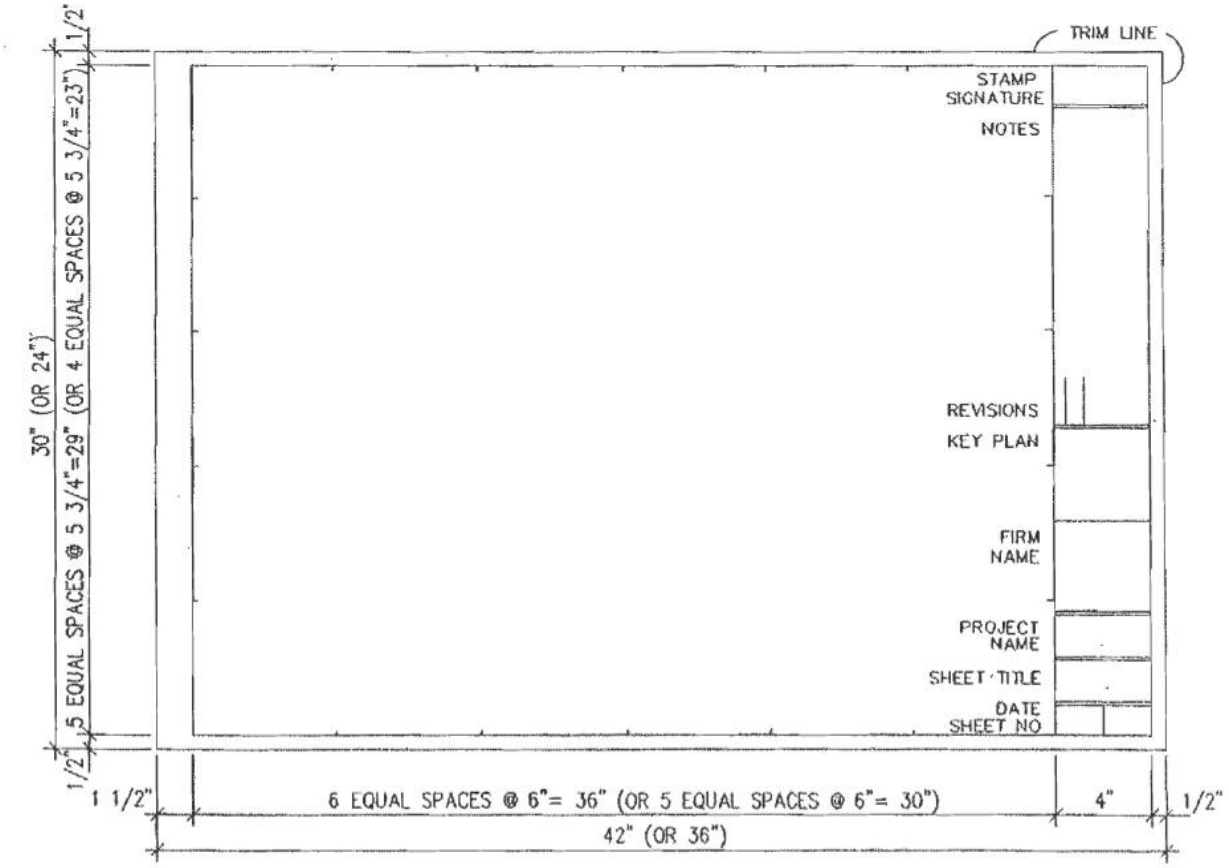
SHEET DESIGN RECOMMENDATIONS

While numerous sheet sizes are now in use by the profession, the most common sizes are approximately 24" x 36" and 30" x 42". These recommendations are based on a layout which divides the drawing body of the sheet into modules of approximately 6" x 5-3/4" to accommodate standard details developed on the same size modules.

Letter-sized (8-1/2" x 11") master sheets, containing one or more standard details are easily filed for repetitive use in paste-up and photographic drafting.

While the title block design may be left to the discretion of the individual office, it is recommended that it be confined to the vertical column on the right hand side of the sheet and that the most pertinent identifying information be positioned so that it is visible when the sheet is folded for mailing or filing.

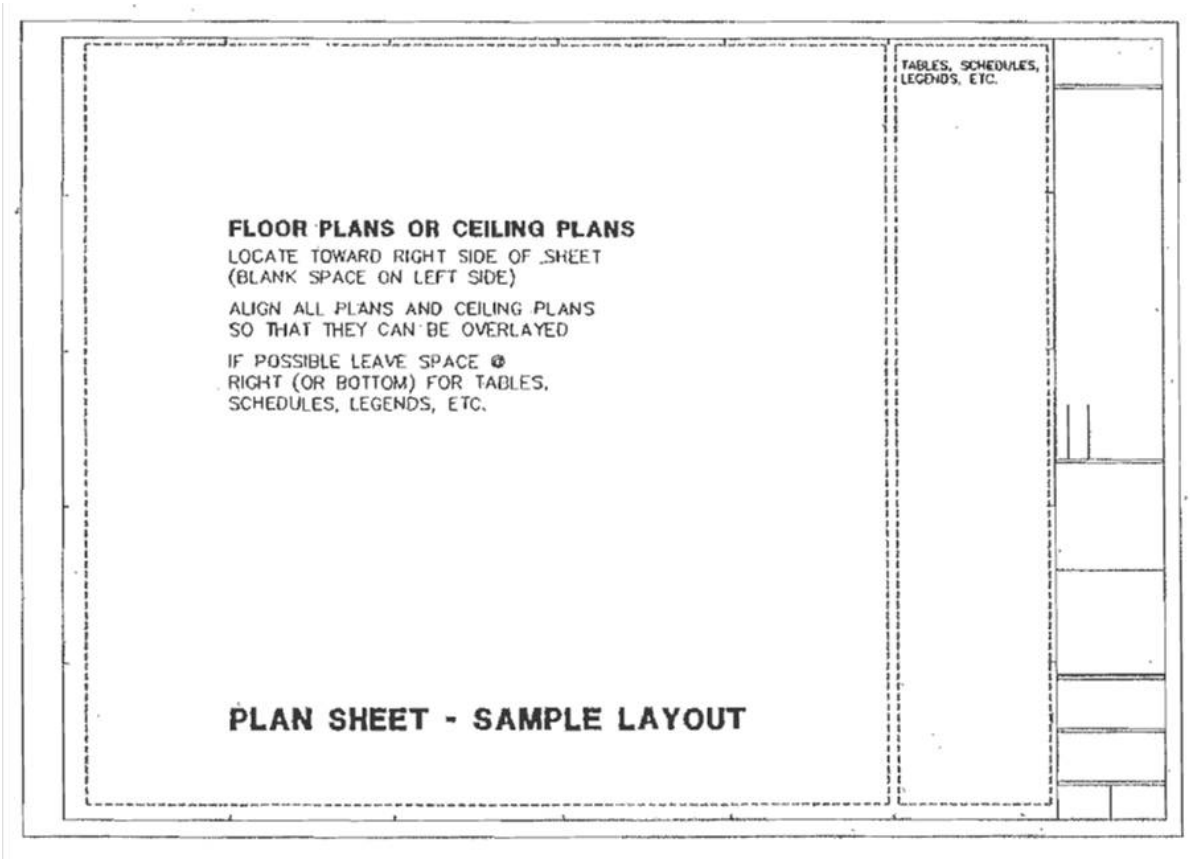
It is further recommended that all title block lettering be placed parallel to the base of the sheet.



GENERAL SHEET LAYOUT RECOMMENDATIONS

Locate drawing information toward the right side of the sheet and away from the binding edge where it may be difficult or impossible to see - especially in thick sets.

Position floor, ceiling or other plans drawn at a common scale in a consistent location on all sheets. This will allow them to be oyerlayed for checking and improve readability of the drawing set.
If details, schedules or tables are placed on plan sheets, locate them toward the right side or bottom so they can be easily seen.

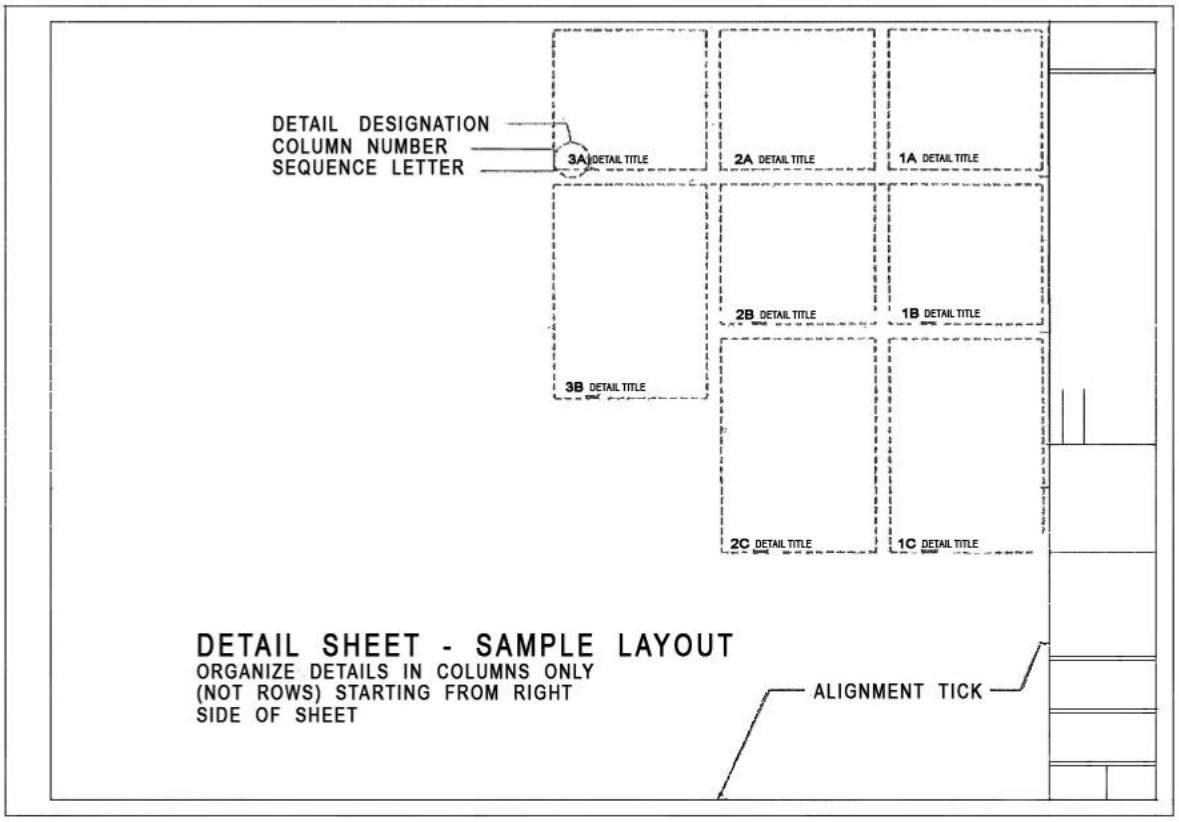


DETAIL SHEET LAYOUT RECOMMENDATIONS

Position details starting from the top right side of the sheet.' This will improve their visibility.

Organize details into columns rather than rows. Details drawn on letter-sized master sheets can vary in height from one to two modules, but are limited to one module in width.

Assign detail designations that correspond to the 'column the detail is in and its sequence within the column, for example 1A", '5B"; etc. rather than consecutively numbering them. This allows for additions and deletions without affecting the ability to find details or their logical sequence.



An alternate method of numbering details is to assign a Specific number to each module. For example, the 30" x 42" sheet contains .6 columns of 5 modules each, so details in the first column would be numbered 1-5, the second column 6-10, etc. Not all numbers are used if • some modules are empty, or if tail details occupy more than one module. This method also allows for additions and deletions without disrupting the numbering system or logical layout of the sheet.

9 Drawing Numbering Systems

RECOMMENDATIONS

This procedure, more than any other, if followed uniformly, will provide the user with a more efficiently .organized document. Large projects require more flexibility in production than small ones, therefore two systems are recommended. The system utilized will depend on the number of sheets involved.

A readily identifiable alphabetical prefix should be used to denote the specific discipline covered by that group of drawings. While we should all use the same prefixes, local custom or practice may make some of them unnecessary on certain projects; i.e. plumbing and fire protection are often considered Mechanical drawings and included in the M prefix without a separate P & F division.

A	Architectural
C	Civil
D	Interior Design
E	Electrical
F	Fire Protection
G	Graphics
K	Food Service
L	Landscape
M	Mechanical
P	Plumbing
S	Structural
T	Title

Large, complex jobs may involve unique consultants such as specialty lighting, water feature, etc. Assign alphabetical prefixes to their drawings with care so as not to cause confusion with the major disciplines.

GROUPING AND NUMERICAL SEQUENCE
TYPE 1 (LARGE PROJECT'S):

For projects with 30-35 drawings per discipline or more, drawings are divided into chapters. Additional drawings can then be added within the chapters without interrupting the logical order of the set.

Consultant drawings should be grouped in the same order - and use the same numbering system - as Architectural. If a particular chapter is not needed by a consultant, that chapter number is simply passed over.

For very large projects, consider dividing plans of different type and/or scales into their own chapters. For example, create separate groupings of: overall plans; sector plans; detail plans; reflected ceiling plans, etc.

For large projects it may also be beneficial to split details into several chapters in order to keep like items grouped together. These subdivisions could include: site details; exterior enclosure details; interior construction details; casework details, etc.

While the zero after the decimal point in the following samples may be omitted, having a consistent number of characters in each drawing number facilitates computer sorting for various monitoring functions. If more than 99 sheets per chapter are anticipated, there should be three digits following the decimal point, or the chapter should be split into 2 or more smaller chapters to maintain flexibility and readability of the set.

While drawing number examples throughout this Guide show decimal points (^{ft}.") separating chapter designations from the sequential drawing numbers within them, some firms prefer using dashes ("-n) instead.

Sequence Type 1 Example:

Title

T0.01, .02, .03 COVER SHEET, DRAWING INDEX

T1.01, .02_03 BORING LOG, SURVEY

Architectural Drawings

A0.01, .02, .03	GENERAL NOTES, SYMBOLS, ABBREVIATIONS, LEGENDS, VICINITY MAP,. ARCHITECTURAL SITE PLAN
A1.01_02, .03	DEMOLITION, TEMPORARY WORK, EXISTING CONDITIONS (if 'applicable, otherwise PLANS becomes chapter AI)
A2.01, .02, .03	PLANS
A3.01, .02, .03	EXTERIOR ELEVATIONS, BUILDING SECTIONS
A4.01, .02, .03	WALL SECTIONS
A5.01, .02, .03	STAIR, RAMP & ELEVATOR CORE (VERTICAL CIRCULATION) PLANS, SECTIONS
A6.01, .02, .03	INTERIOR ELEVATIONS
A7.01, .02, .03	ROOM FINISH, COLOR & DOOR SCHEDULES, DOOR FRAME, WINDOW & LOUVER TYPE ELEVATIONS AND/OR SCHEDULES
A8.01, .02, .03	PARTITION TYPES, ALL DETAILS

Partition types can optionally be located in either chapter A0 (general information) or chapter A7 (schedules), depending on how your firm chooses to classify this type of information.

GROUPING AND NUMERICAL SEQUENCE TYPE 2 (SMALL PROJECTS):

For projects with fewer than 30-35 drawings per discipline, the same letter designations are used for each discipline but the chapter groupings are unnecessary. It is still recommended; however, that each discipline follow much the same Sequence as the Architectural drawings. Obviously, certain projects will require more than one sheet for plans or sections or other drawing types, but these are simply numbered in sequence.

Sequence Type 2 Example:

Architectural

Drawings

Al- TITLE, INDEX, SYMBOLS, ABBREVIATIONS, VICINITY MAP, etc.

A-2 SITE PLAN AND DETAILS

A-3 FLOOR PLAN, CEILING PLAN, FINISH SCHEDULES

A-4 ROOF PLAN & DETAILS

A-5 EXTERIOR ELEVATIONS

A-6 SECTIONS

A-7 STAIRWAYS, VERTICAL CIRCULATION

A-8 DETAIL PLANS & INTERIOR ELEVATIONS

A-9 DOOR & WINDOW SCHEDULES & DETAILS

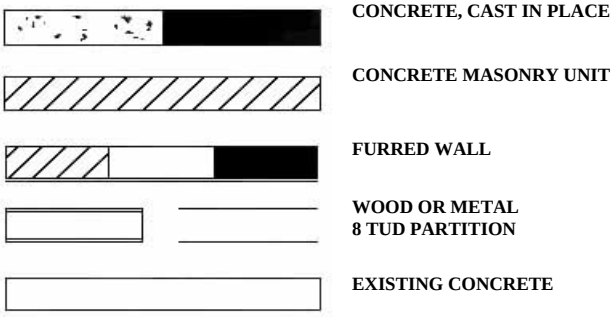
A-10 DETAILS

10 Partitions

This partition scheduling system consists of three elements: 1) Partition Symbol and Plan Indication; 2) Partition Type Details; and 3) Partition Type General Notes.

PARTITION SYMBOL AND PLAN INDICATION RECOMMENDATIONS

Various partition types are designated on plans by the appropriate symbol (**see SYMBOLS**, page 3-1) and plan indication. The plan indications have been chosen for simplicity and ease of drafting, and are readily discernible from other material indications.



Draw partition indication patterns free-hand wherever practicable (stick-on tapes of similar patterns can also be used).

Use lines and dots which can be easily applied to the drawing face and which will read equally well for short or long partitions.

Scale indications appropriately to avoid merging of close lines and loss of light lines or dots during reproduction and reduction processes.

Show indication patterns continuously throughout each partition.

PARTITION TYPE DETAIL RECOMMENDATIONS

Indicate only generic partition construction such as framing, substrates and backing materials. Finishes and applied materials are noted in the Room Finish Schedule or Room Material Code List.

Divide partitions into groups according to general construction type:

1A,B,C = standard partition to structure
2A,B,C = standard partition - framing to structure, facings thru ceiling only
3A,B,C = standard partition to ceiling
4A,B,C = furred partition to structure
5A,B,C = furred partition - framing to, structure, facing thru ceiling only
6A,B,C = furred partition to ceiling
7A,B,C = chase partition (partitions with double rows of braced studs)
8A,B,C = shaft partitions (rated vertical enclosures to structure)
9A,B,C = CMU walls or partitions (usually to structure - may have furred partitions over them as part of the same detail)

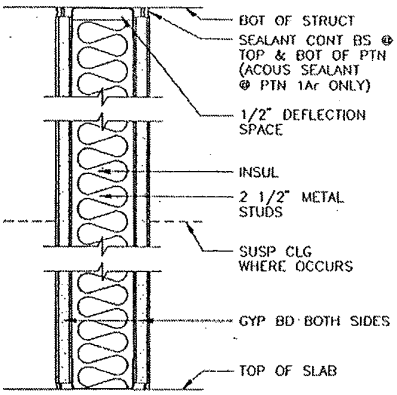
Use subscripts appended to the partition designation to indicate special or non-typical conditions. For example, partitions used in both rated and non-rated conditions are covered by a single partition type detail and number, with the subscript "r" added for the version requiring a fire rating by code.

Include the fire and sound transmission ratings, if any, as well as UL, ICBO, UBC, USG or other testing agency test reference number on each detail.

Details that are drawn on 8-1/2"x11" sheets can be reused by copying onto adhesive-backed or other transparancies and applying to drawing sheets, or included in a "Detail Book" as an appendix to the Project Manual.

Show exterior walls as wall sections and group them with drawings describing other elements of the building enclosure. They are not partition types.

Consider including a. rated wall location or occupancy separation plan in the drawings to clarify which partitions require rated construction.



1Ar PARTITION FIRE: 1 HR UL #U448

SCALE: 3" = 1' -0" SOUND: 45-49 STC

1Br SIMILAR TO "IAr" EXCEPT W/NO INSUL

PARTITION TYPE GENERAL NOTES RECOMMENDATIONS

The Partition Type General Notes complete the system and should include information common to most details, thus simplifying their notations. Include pertinent references to other portions of the drawings or the specifications, as appropriate.

PARTITION GENERAL NOTES

1. PARTITION TYPE NUMBER CORRESPONDS TO THE MARK INDICATED ON PLANS FOR THAT PARTITION. SPECIAL OR NON-TYPICAL CONDITIONS ARE SHOWN BY SUBSCRIPTS APPENDED TO THE, PARTITION TYPE NUMBER.

2. FIRE-RATED CONSTRUCTION: RATED PARTITIONS ARE DESIGNATED BY THE SUBSCRIPT "r". SEE TESTING AGENCY REFERENCE NOTED ON DETAIL FOR MORE DETAILED CONSTRUCTION DESCRIPTION: SEE ALSO, "RATED WALL LOCATION AND OCCUPANCY SEPARATION PLAN" FOR LOCATION OF PARTITIONS REQUIRING RATINGS BY CODE.

3. PARTITION DETAILS SHOW SUBSTRATES SEE ROOM FINISH SCHEDULE, PLANS, AND EXTERIOR AND INTERIOR ELEVATIONS FOR MATERIAL AND FINISH LOCATIONS AND DESCRIPTIONS.

4, FRAMING: SEE SPECIFICATION SECTION 09110 FOR FRAMING GAGES, SPACING AND HEIGHT LIMITATION CRITERIA. ALL STUDS ARE 3 5/8" UNLESS OTHERWISE NOTED.

5. PARTITION FACE MATERIAL:

   ALL GYPSUM BOARD AND VENEER PLASTER GYPSUM BASE SHALL BE 5/8" TYPE "X" OR FIRECODE "C" UNLESS OTHERWISE NOTED.

   USE TILE BACKER BOARD BENEATH CERAMIC TILE.OR STONE AT TUBS, - SHOWER STALLS OR OTHER AREAS EXPOSED TO MOISTURE. '

   SEE ROOM FINISH SCHEDULE FOR PLASTER TYPE (CEMENT, GYPSUM, KEENE'S CEMENT, 'ETC.).

6. INSULATION: SEE THE FOLLOWING SPECIFICATION SECTIONS:
   07200 - THERMAL
   07250 - FIREPROOFING
   09500 - ACOUSTICAL

11 Room Finish Schedule

RECOMMENDATIONS

The scheduling of finishes should not duplicate information conveyed by other means, such as details. Only finishes and applied materials are noted. Partition construction, substrates and backing materials are noted on the Partition Type Details (see PARTITIONS, page 10-2).

If possible, avoid creating a finish schedule by placing room finish information directly on floor plan drawings in the room to which it pertains. General notes, remarks and code or abbreviations lists may be placed with other legends and symbols.

ROOM MATERIAL CODE LIST SYSTEM

This system consists of scheduling materials by code letters in a Room Material Code List. The code letters are then placed in the Room Identification Block (see SYMBOLS, page 3-1) in each room on the plans. If a room is too small for the identification block to fit, it may be placed outside the room and connected to it by a leader line.

When more than one type or size of the same material is used, assign a separate code designation to each. For example, 2'x2' and 2'x4[1] acoustical panels would be given the codes ACOUSI and ACOUS2.

A general notes list similiar to the one below should be included.

ROOM MATERIAL CODE LIST GENERAL NOTES

A. LETTERS IN "ROOM MATERIAL CODE LIST" CORRESPOND WITH THOSE IN ROOM IDENTIFICATION BLOCKS ON FLOOR PLANS.

2. SEE "COLOR AND MATERIAL SCHEDULE" AND EXTERIOR AND INTERIOR ELEVATIONS FOR ADDITIONAL FINISH AND MATERIAL LOCATIONS AND DESCRIPTIONS.

3. WAINSCOTS SHALL. EXTEND TO 4'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

4. USE TILE BACKER BOARD BENEATH CERAMIC TILE OR STONE AND PROVIDE A WATERPROOF MEMBRANE FULL HEIGHT OF WALL OR PARTITION ABUTTING TUBS, SHOWER STALLS OR OTHER AREAS EXPOSED TO MOISTURE.

5. PROVIDE HOLD-DOWN CLIPS AT FIRE RATED SUSPENDED CEILINGS.

ROOM MATERIAL CODE LIST

FLOOR/BASE	WALL &/OR WAINSCOT	CEILING OR SOFFIT
A. EXPOSED CONSTRUCTION	A. EXPOSED CONSTRUCTION	A. EXPOSED CONSTRUCTION
B. CERAMIC TILE/ CERAMIC TILE COVE BASE INTEGRAL	B. GYPSUM BOARD CERAMIC TILE WAINSCOT	B. GYPSUM BOARD
		C. CEMET PLASTER
C. RESIL FLOORING/ 4″ RESIL TOPSET COVE BASE	C. CERAMIC TILE	D. SUSPENDED LAY-IN ACOUSTICAL PANEL CEILING SYSTEM
	D. WALL COVERING	

ROOM FINISH SCHEDULE SYSTEM

For larger or more complex projects, a Room Finish Schedule may be more appropriate than using the Room Material Code List alone.

The Room Finish Schedule consists of four parts: Room Material Code or Abbreviations List; Room Finish Schedule General Notes; Room Finish Schedule Remarks; and the Room Finish schedule itself. All elements must be utilized for the system to be effective.

The Room Material Code or Abbreviations List is a "shopping list" for completing the, Room Finish Schedule. It is permissible to vary its abbreviations from those in the general project abbreviations list in order to conserve space in the schedule (i.e. CP in lieu of CEM PLAS for cement plaster).

ROOM MATERIAL ABBREVIATIONS LIST

ACOUS1	ACOUSTICAL PANEL, 2' x 2' LAY-IN
ACOUS2	ACOUSTICAL PANEL, 2' x 4' LAY-IN
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CPT	CARPET
CT	CERAMIC TILE (BASE = COVED, WHERE OCCURS)
EXPO	EXPOSED CONSTRUCTION
GWB	GYPSUM WALLBOARD
QT	QUARRY TILE (BASE = COVED, WHERE OCCURS)
RB	RESILIENT BASE, COVED (STRAIGHT AT CARPET)
RF	RESILIENT FLOORING ,
X	FEATURE NOT REQUIRED

When more than one material is used fix' a surface, the extent and type of material should be clarified on plans or elevations. When a complicated combination of, materials-is used, refer to details as well.

Use only letter designations in the Remarks column, which refer to the more detailed descriptions in a Room Finish Schedule Remarks list.

Designations used in the Finish columns should be the same as those in the specifications.

ROOM FINISH SCHEDULE GENERAL NOTES

1. "__" INDICATES NO ENTRY FOR THAT CATEGORY.
2. "‹ >" AROUND AN ENTRY INDICATES A REMARK RELATING TO THAT ENTRY. REFER TO THE REMARKS COLUMN OF THE SCHEDULE AND THE "ROOM FINISH SCHEDULE REMARKS" LIST. THE ORDER OF ITEMS IN. THE REMARKS COLUMN IS AS THEY OCCUR FROM LEFT TO RIGHT IN THE SCHEDULE'.
3. FOR MATERIAL EXPLANATIONS REFER TO THE "ROOM MATERIAL ABBREVIATIONS LIST"
4. REFER ALSO TO.THE "COLOR AND MATERIAL SCHEDULE", PLANS AND THE EXTERIOR AND INTERIOR ELEVATIONS FOR FINISH AND MATERIAL. LOCATIONS AND DESCRIPTIONS.
5. SEE THE FOLLOWING SPECIFICATION SECTIONS FOR FINISH NUMBER DESCRIPTIONS:

   PREFIX & SECTION:

S	03300, CAST-IN-PLACE CONCRETE SURFACES
C	03300, CAST-IN-PLACE CONCRETE FORMS
PC	03400, PRECAST CONCRETE
P	09200, PLASTER
F	09900, PAINT STAIN, SEALER, ETC. FINISHES

ROOM FINISH SHCEDULE REMARKS

A. WAINSCOTS SHALL EXTEND TO 4"-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

B. USE TILE BACKER BOARD BENEATH CERAMIC TILE OR STONE AND PROVIDE A WATERPROOF MEMBRANE FULL'HEIGHT OF WALL OR PARTITION ABUTTING - TUBS, SHOWER STALLS OR OTHER AREAS EXPOSED TO MOISTURE.

C. PROVIDE HOLD-DOWN CLIPS AT FIRE RATED SUSPENDED CEILINGS.

Either the Room Material Code List or Room Material Abbreviations List may be utilized in creating Room Finish Schedules as the following samples illustrate.

ROOM FINISH SCHEDULE

* ENTRY IN REV COLUMN INDICATES LAST CHANGE (ADDENDUM, CHANGE ORDER OR CONSTRUCTION SKETCH)

KEY	REV*	ROOM NO	ROOM NAME	FLOOR/BASE MATERIAL	FLOOR/BASE FINISH	WALLS 81/OR WAINSCOT MATERIAL	WALLS 81/OR WAINSCOT FINISH	CEILING MATERIAL	CEILING FINISH	CEILING HEIGHT	REMARKS
1		804	MACHINE ROOM	A	S1,S9	A	C1,S9	A	C3,S9	10'-10	--
2		105	WOMEN TOILET	B	S5,F9	<B>	F4,F9	B	F4	8'-0"	A,B

ROOM FINISH SCHEDULE

* ENTRY IN REV COLUMN INDICATES LAST CHANGE (ADDENDUM, CHANGE ORDER OR CONSTRUCTION SKETCH)

KEY	REV*	ROOM NO	ROOM NAME	FLOOR/BASE MATERIAL	FLOOR/BASE FINISH	WALLS &/OR WAINSCOT MATERIAL	WALLS &/OR WAINSCOT FINISH	CEILING MATERIAL	CEILING FINISH	CEILING HEIGHT	REMARKS
1		BQ4	MACHINE ROOM	EXPO	S1,S9	EXPO	C1,S9	EXPO	C3,S9	10'-10"	--
2		105	WOMEN TOILET-	CT/CT	S50F9	<GWB/CT>	F4,F9	GWB	F4	8ʷ-0”	A,B

12 Color Schedule

The Color and Material Schedule supplements the Room Finish Schedule by enumerating specifics about materials and finishes used 'on a project.

For certain small projects, the Color and Material Index may be used without the Color and 'Material Schedule when the material and color codes can be noted directly on floor plans, interior elevations, ceiling plans, etc.

RECOMMENDATIONS

The Color and Material Schedule consists of four parts: Color and Material Index; Color and Material Schedule General Notes; Room Color and Material Schedule Remarks; and the Color and Material Schedule itself. All elements must be utilized for the system to be effective.

The Color and Material Index is a "shopping list" for completing the Color and Material Schedule.

The Color and Material Schedule and its related components should be placed on the same sheet as the Room Finish Schedule whenever possible.

Use only letter designations in the Remarks column, which refer to the more detailed descriptions in a Color and Material Schedule Remarks list.

COLOR AND MATERIAL SCHEDULE GENERAL NOTES

1. "--" INDICATES NO ENTRY FORMAT CATEGORY.

2. "< >" AROUND AN ENTRY INDICATES A REMARK RELATING TO THAT ENTRY. REFER TO THE REMARKS COLUMN OF THE SCHEDULE AND THE "COLOR AND MATERIAL SCHEDULE REMARKS" LIST. THE ORDER OF ITEMS IN THE REMARKS COLUMN IS AS THEY OCCUR FROM LEFT TO RIGHT IN THE SCHEDULE.

3. FOR COLOR AND MATERIAL EXPLANATIONS REFER TO THE "COLOR AND MATERIAL INDEX"

4. REFER ALSO TO THE "ROOM FINISH SCHEDULE", PLANS AND THE EXTERIOR AND INTERIOR ELEVATIONS FOR FINISH AND MATERIAL LOCATIONS.

S. ALUMINUM DOORS, FRAMES AND WINDOWS ARE NOT LISTED.IN THIS SCHEDULE. STANDARD ALUMINUM FINISH SHALL BE CLEAR ANODIZED, UNLESS OTHERWISE NOTED. .

6. DOOR AND FRAMES ARE GENERALLY SCHEDULED ONLY ONCE, WITH THE ROOM INTO WHICH THEY SWING. A DOUBLE LISTING DENOTES DIFFERING MATERIALS OR FINISHES ON OPPOSITE SIDES.

A Color and Material Schedule Remarks list should accompany the schedule to give detailed descriptions of items not easily covered in the schedule itself. The Remarks list should follow the same format as that for the Room Finish Schedule. See ROOM FINISH SCHEDULE, page 11-2 for a sample.

COLOR AND MATERIAL INDEX

CODE	COLOR & FINISH SIMILAR TO: SOURCE/MANUFACTURER	MFR # AND/OR COLOR #	PATTERN, DESIGN OR COLOR NAME
GROUP 1 - CERAMIC TILE, STONE AND GROUT:			
IA	DAL-TILE "VITRESTONE"	1914	AGATE
lB	HYDROMENT LATEX GROUT	AS SELECTED BY ARCHITECT	
GROUP 2 - RESILIENT FLOORING AND BASE:			
2A	BURKE TOP SET COVE BASE	597P	MOCHA
2B	ARMSTRONG VINYL CORLON	86511	GRAY/BEIGE
GROUP 3 - CARPET AND PAD:			
3A	WORLD CARPET "82" ELIZABETHAN"	5879	CAST IRON
38	TRED-MOR CLASS II RUBBER PAD	3700	QUALITY
3C	-HARTEX CLASS II SYNTHETIC PAD	--	CONTRACT
GROUP 4 - PAINTS AND STAINS:			
4A	FULLER O'BRIEN	HIOH	WHITE WING
4B	FULLER O'BRIEN	H6OH	PLUSH BROWN
4C	FULLER O'BRIEN	H128H	KODIAK BROWN
GROUP 5 - MISCELLANEOUS ITEMS:			

CODE	ITEM DESCRIPTION	COLOR & FINISH SIMILAR TO: SOURCE/MANUFACTURER	MFR # AND/OR COLOR #. PATTERN, DESIGN OR COLOR NAME
5A	TOILET PARTITION	BOBRICK	WHITE

COLOR AND MATERIAL SCHEDULE

* ENTRY IN REV COLUMN INDICATES LAST CHANGE (ADDENDUM, CHANGE ORDER OR CONSTRUCTION SKETCH)

KEY	REV*	ROOM NO	ROOM NAME	FLOOR/BASE	WALLS &/OR WAINSCOT	CEILING	DOOR	TRIM	MISCELLANEOUS	REMARKS
1		B04	MACHINE ROOM	--	--	--	4B	4C	--	--
2		105	WOMEN TOILET	AB,1B	1A,1B,4A	4A	4B	4C	5A	--

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Door Schedule

A door schedule should list all doors or be a listing of groups of identical doors.

Large projects having extensive variations require the listing of all doors, while smaller projects or ones having typical doors and few variations, will allow doors to be grouped together.

Exactly which columns the schedule contains can be adjusted to fit a firm's specific requirements.

RECOMMENDATIONS

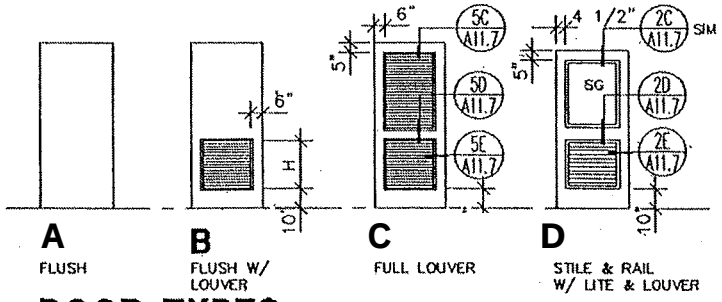
The Door Schedule and its related notes and remarks lists, door and frame types should appear on or adjacent to the floor plan sheets, if space permits.

Indicate detail references and other typical characteristics on the door and frame type elevations.

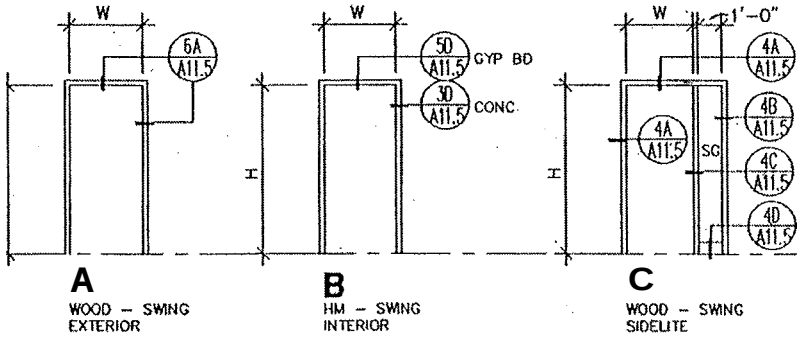
Use the Remarks column to clarify special conditions and keep the schedule simple.

If the Door Schedule is created by computer, fill in all typical information such as door thickness, construction, etc., to allow for sorting and checking of common characteristics. If the schedule is created manually, use an asterisk (*) to denote the most typical item for each column, making sure that the Door Schedule General Notes define what the asterisk represents.

If the schedule is prepared by computer, the Key column allows a sorted schedule to be resorted back to its original order. It also serves as a line marker for quickly locating a specific entry. On large projects, inclusion of a Room Type column allows• sorting of doors by function to check common properties, for example the fire ratings of stair doors.



DOOR TYPES



FRAME TYPES

DOOR SCHEDULE

* ENTRY IN REV COLUMN INDICATES LAST CHANGE (ADDENDUM, CHANGE ORDER OR CONSTRUCT ON SKETCH)

KEY	REV*	ROOM TYPE	DOOR NO	OPENING SIZE	DOOR TYPE (NOTE 1)	THK	CONSTR/ FINISH (NOTE 2)	GLASS OR LVR (NOTE 3)	RATING (NOTE 4)	FRAME TYPE	THR .TYPE (NOTE 5)	HDWE GROUP	REMARKS
1		MECH	118	6''-0" x 7'-0"	JJ	1 3/4"	HM/MP		20 MIN	T	A		<67> A
2		LOAD	119	18'-O" x 8'-0"	K--	MR/MP	20 MIN		--	--	<64> A		
3		BOH	123	3'-0" x 7'-0"	U	1 3/4"	HM/MP	SG	20 MIN	T	a		<35> A
4		BOH	123	6'-0" x 7'-0"	UU	13/4"	HM/MP	SG	20 MIN	T	B		<114> A
5		CAFE	128	3'-0" x 7'-0"	U	1 3/4"	HM/MP	SG	20 MIN	Q	B		<118> A
6		CAFE	128a	3'-0" x 8'-4"	C	--	AL/EP	SG		<AT> C		64	II
7		CAFE	128b	3'-0" x 8'-4"	C	--	AL/EP	SG		<AT>	C	64	D
S		TOIL	135	3'-0" x 7'-0"	J	13/4"	SC/PL		20 MIN	T	A		<56> A
9		LAUN	137	2'-4" x 7'-0"	L	1 3/4"	HM/MP	<SM>	20 MIN	T	D		<40> G

DOOR SCHEDULE GENERAL NOTES

NOTE: DOOR NUMBER IN THE SCHEDULE GENERALLY CORRESPONDS WITH NUMBER OF ROOM IN WHICH DOOR IS LOCATED. IF THERE IS MORE THAN ONE DOOR IN A ROOM, SUBSEQUENT DOORS ARE DESIGNATED BY A LETTER"SUFFIX AFTER THE ROOM NUMBER.

"< >" AROUND-AN ENTRY DENOTES REMARK RELATING TO THAT ENTRY. REFER TO REMARKS COLUMN OF SCHEDULE & "DOOR SCHEDULE REMARKS" LIST.

1. NUMBER OF LETTERS IN DOOR TYPE COLUMN GENERALLY INDICATES NUMBER OF DOORS OF THAT TYPE IN JHE OPENING. (CONFIRM WITH DOOR TYPE ELEVATIONS.)

2. DOOR CONSTRUCTION:

   AL = ALUMINUM AND GLASS
   HC = HOLLOW CORE WOOD
   HM = HOLLOW METAL (STEEL)
   MR = METAL (STEEL) ROLL-UP
   SC = SOLID CORE WOOD
   SR = STILE AND RAIL WOOD

   FACING AND FINISH:

   AN = ALUMINUM, ANODIZED
   EP = ALUMINUM, ELECTROSTATIC, PAINTED
   MP = METAL, PAINTED
   PL = PLASTIC LAMINATE
   WP = WOOD. PAINTED
   WS = HARDWOOD, STAINED

3. GLASS/LOUVER TYPES:

   AL = ALUMINUM (LOUVER)
   SG = SAFETY GLASS
   SM = SHEET METAL (LOUVER)
   TG = TEMPERED GLASS
   WD = WOOD LOUVER (SPECIES & FINISH TO MATCH DOOR)
   WG = WIRE GLASS

   ALL GLASS IS SOLAR BRONZE UNLESS OTHERWISE NOTED.

4. 3 HR, 1-1/2 HR, 1 MR, 3/4 HR, OR 20 MINUTE INDICATE LABELED TIME OF FIRE RATING.

5. SEE SHEET A10.1 FOR TYPICAL THRESHOLDS AND FLOORING TRANSITIONS.

DOOR SCHEDULE GENERAL NOTES

A. CLOSER REQUIRED BY CODE - SEE HARDWARE SCHEDULE.

B. PANIC HARDWARE REQUIRED BY CODE - SEE HARDWARE SCHEDULE.

C. UNDERCUT DOOR 1/2" CLEAR OF FLOOR MATERIAL.

D. FRAME TYPE INDICATES A WINDOW ASSEMBLY - SEE WINDOW TYPE ELEVATIONS.

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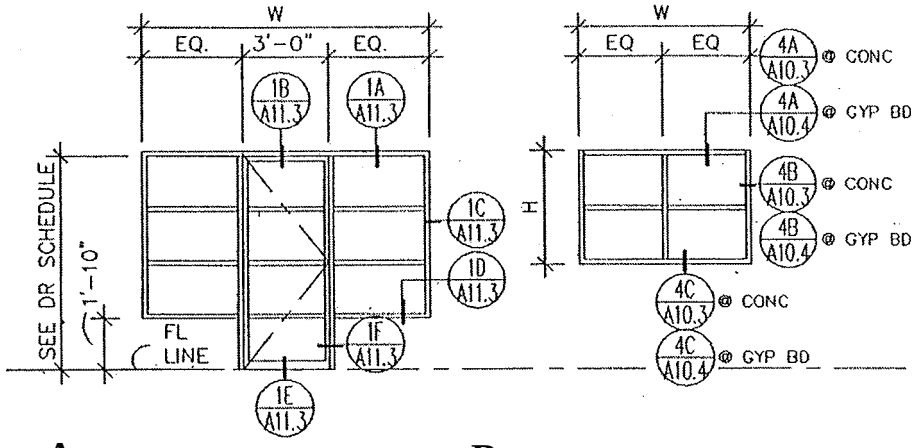
Window & Louver Types

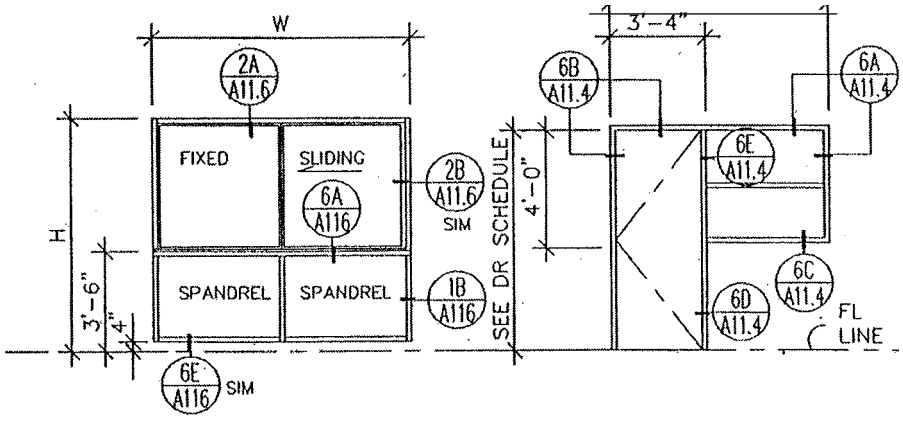
The window and louver type drawings are a graphic depiction of the various sizes and configurations of units used throughout the project.

For large projects with many window and louver sizes and shapes, tabular schedules indicating size, type, finish etc. may be useful for tracking the exact location and number of windows and louvers.

For medium size projects, window and louver type elevations may be used alone by adding all size, finish, operation information, and other required data to the type elevations themselves.

For small or simple projects, where exterior elevations can easily show all conditions, no type elevations or schedule would be required.





WINDOW TYPES

RECOMMENDATIONS

Place window and louver marks on floor plans only. The schedules or type elevations should clearly show: all required attributes, including mounting heights.

Drawn window and louver type elevations at 1/4"=1'-0".

Draw elevations as viewed from the building exterior.

Dimensions noted on elevations or in schedules should be clarified in details. For example, a scheduled size may be a wall rough opening, frame outside dimension, or some other point, depending on the installation situation.

Operation of vents or direction of sliding panels should be indicated on elevations or schedules.

If the same window or louver unit is made from more than one material and a schedule is not being used, a different type designation should be assigned for each material used.

If a window or louver type is placed into more than one type of wall construction, detail reference marks for each condition should be placed on the window or louver elevations.

Curtainwalls are part of the building envelope and should not be scheduled as windows. Use exterior elevations or other appropriate drawings to show required detail references.

WINDOW SCHEDULE GENERAL NOTES

"< >" AROUND AN ENTRY DENOTES REMARK RELATING TO THAT ENTRY. REFER TO REMARKS COLUMN OF SCHEDULE & "WINDOW SCHEDULE REMARKS" LIST.

1. CONSTRUCTION:

   AL = ALUMINUM
   HM = HOLLOW METAL
   MD = WOOD

   AN = ALUMINUM, ANODIZED
   KN = ALUMINUM, KYNAR
   MP = METAL, PAINTED
   WS = WOOD, STAINED

2. GLASS TYPES:

   FG = FLOAT GLASS
   MG = MIRROR GLASS
   PG = PROJECTION GLASS
   SG = SAFETY GLASS
   SN = SPANDREL GLASS
   TG = TEMPERED GLASS
   WG = WIRE GLASS

3. FIBERGLAS SCREENS IN ALUMINUM FRAMES, MOUNTED ON EXTERIOR SIDE OF OPERABLE SECTIONS. UNLESS OTHERWISE NOTED.
4. GLASS IS SOLOR BRONZE UNLESS OTHERWISE NOTED.
5. GLASS IS 3/16" THICK UNLESS OTHERWISE NOTED.

WINDOW SCHEDULE REMARKS

A. 1/4" CLEAR GLASS.

B. SEE DOOR SCHEDULE FOR DOOR INFORMATION.

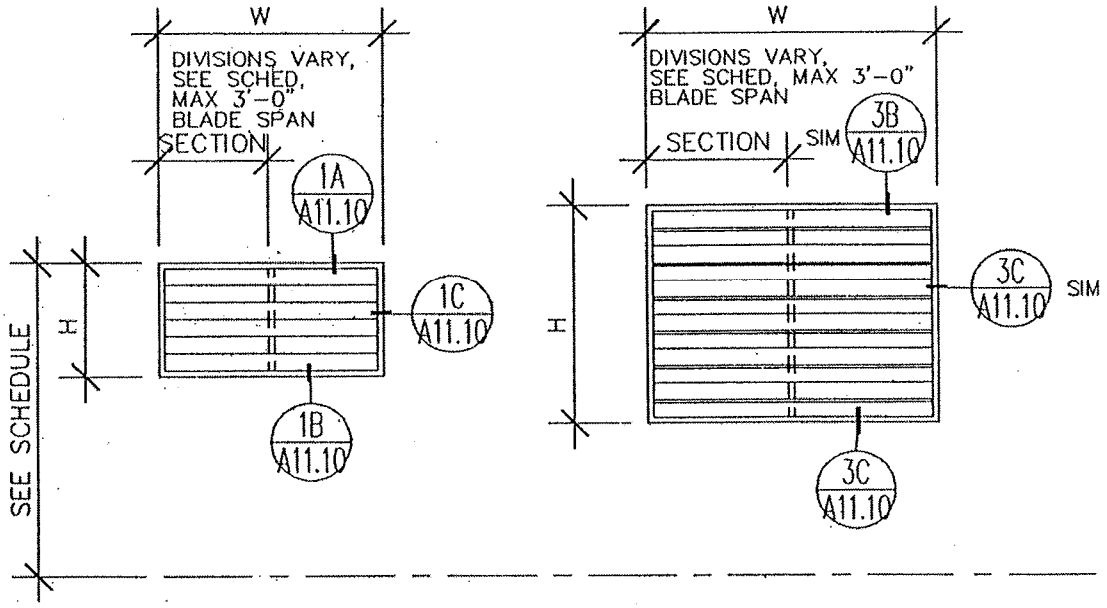
C. 1/4" CLEAR WIRE GLASS.

D. INSTALL SLIDING WINDOW ASSEMBLY WITHIN

WINDOW SCHEDULE

* ENTRY IN REV COLUMN INDICATES LAST CHANGE (ADDENDUM, CHANGE ORDER OR CONSTRUCTION SKETCH)

REV*	Window Mark	ROOM NO	OPENING	SIZE	DATUM FL EL TO HEAD DIM	WINDOW TYPE	THK	CONSTR/ FINISH (NOTE 1)	GLASS (NOTE 2)	SCREENS (NOTE 3)	REMARKS
	A	105	3' -0"	X 6' -0"	8' -0"	<A>	4"	AL/KN	FG/SG		B
	B	110	2' -0"	X 2' -0"	6' -8"	B	4 7/8"	HM/MP	<WG>		C
	C	134	6' -0"	X 6' -8"	6' -8"	<D>	4 7/8"	HM/MP	FG		B
	D	205	8' -0"	X 6' -8"	7' -0"	C	<6">	AL/KN	FG/SN	YES	D
	E	234	3' -0"	X 4' -0"	6' -8"	<A>	4"	AL/KN	<FG/SG>		A,B
	F	450	7' -0"	X 7' -2"	7' -2"	<D>	4 7/8"	HM/MP	FG		D
	G	534	8' -0"	X 6' -8"	7' -0"	C	<6">	AL/KN	FG/SN	YES	D



1 STRIP LOUVER, HIDDEN MULLION

2 ACOUS LOUVER, HIDDEN MULLION

LOUVER TYPES

LOUVER SCHEDULE

* ENTRY IN REV COLUMN INDICATES LAST CHANGE (ADDENDUM, CHANGE ORDER OR CONSTRUCTION SKETCH)

REV*	LVR Mark	LOCATION (NOTE 1)	OPENING SIZE	SECTIONS (NOTE 2)	LOUVER TYPE (NOTE 3)	DATUM FL EL TO HEAD DIM	THK	CONSTR/ FINISH (NOTE 4)	FILTERS/ SCREEN (NOTE 5)	REMARKS
	1	105	3'-0" X 6'-0"	2H	AC	8'-0"	12"	AL/KN	BS	
	2	110	2'-0" X 2'-0"		<STD>	6'-8"	4"	STL/MP	IS	C
	3	ELEV SHAFT 1	3'-0" X 4'-0"		DR	<-->	6"	AL/AN	BS	B
	4	CRAWL SPACE	3'-0" X 4'-0"		DR	6'-8"	6"	AL/AN	BS	
	5	334	3'-0" X 4'-0"		<DR>	6'-8"	6"	AL/AN	BS	A
	6	WING B ATTIC	2'-0" X 4'-0"		DR	5'-0"	6"	AL/AN	BS	
	7	450	12'-0" X 3'-0"	4H	AC	12'-0"	12"	AL/KN	BS	
	8	534	3'-0" X 8'-0"	2V	<STD>	16'-0"	4"	STL/MP	IS	C

LOUVER SCHEDULE GENERAL NOTES

"< >" AROUND AN ENTRY DENOTES REMARK RELATING TO THAT ENTRY. REFER TO REMARKS COLUMN OF SCHEDULE & "LOUVER SCHEDULE REMARKS" LIST.

1. LOCATION OF LOUVER IS BY ROOM NUMBER OR SPACE DESCRIPTION.

NUMBER OF LOUVER SECTIONS PER OPENING. ONE LOUVER PER OPENING UNLESS OTHERWISE NOTED.

H = HORIZONTAL SECTIONS
V = VERTICAL SECTIONS

LOUVER TYPES:

AC = ACOUSTICAL
CF = CONTINUOUS FIXED
DR = DRAINABLE
NP = NARROW PROFILE
STD = STANDARD

4. CONSTRUCTION:

AL = ALUMINUM
STL = STEEL
WO = WOOD

FINISH:
AN = ALUMINUM, ANODIZED
KN = ALUMINUM, KYNAR
MP = METAL, PAINTED
WS = WOOD, STAINED

5. FILTERS & SCREENS:

BS = BIRD SCREEN
F = FILTER
IS = INSECT SCREEN

LOUVER SCHEDULE REMARKS

A. BLANK OFF LOUVER PANELS ON INTERIOR FACE.

B. SEE EXTERIOR ELEVATIONS FOR PANEL LAYOUT.

C. HINGED LOUVER PANEL.

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Typical Mounting Heights

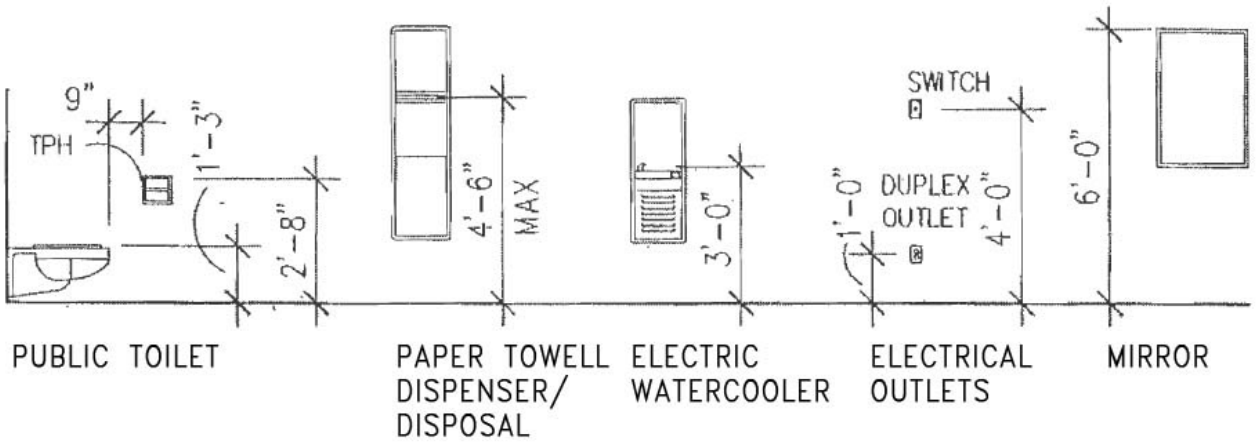
RECOMMENDATIONS

A great deal of drafting time and effort can be saved by inclusion of a drawing showing typical mounting heights of equipment and accessories normally mounted on walls. This drawing can take the place of numerous interior elevations whose only purpose is to show these wall mounted items.

Special care should be taken when mounting heights need to comply with standards for accessibility by disabled persons. Various codes and jurisdictions have differing requirements.

Critical mounting heights are often to points other than the top or bottom of an item. For example, the key mounting height of a telephone is to its coin slot, while that of a paper towel dispenser is to the dispensing slot.

Once created, these elevations can be reused as typical details for future projects.



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Appendix A
Guide to Production Procedures

Dwight K. Mitsunaga, AIA credits extensive, accelerated education and work experiences for his development as an architect and builder. In 1963, at age14, while working on his first construction project as a summer hire; he was inspired to pursue a career in architecture by the project's noted California architect. In 1975, after years of working with the different trades, he received his contractor's license in general engineering and general building. He became a licensed architect and a member of the American Institute of Architects (AIA) in 1978; and was certified by the National Council of Architectural Registration Boards (NCARB) in 1980. He maintains additional licenses in California, Guam, Washington and Oregon.

He received his Bachelor of Arts and Masters degrees in Architecture from the University of Hawaii and pursued doctoral studies in Urban and Regional Planning at the University of Southern California. He played a key role in the development of the nation's first accredited architecture doctorate degree program at the University of Hawaii and was also a member of its first graduating class in 2000. He is an elected member of the School of Architecture's Advisory Council; and is actively involved with the support and development of its program.

He received his formal architectural training in the offices of Gruen Associates in Los Angeles and has been principal architect of his own architectural firms since 1979. He has extensive knowledge of building systems and alternative project delivery methods. He has completed numerous project types for clients throughout Hawaii, the western United States and the Pacific Basin. He is proficient in issues pertaining to Security, Anti-Terrorist Force Protection (ATFP), ADA Barrier Removal, and LEED. He has successfully delivered projects for all branches of the military and numerous federal agencies; and is skilled in the areas of their varying contract negotiations and project delivery requirements.

He has the capacity to offer design-build services. He is a member of the General Contractors Association (GCA) and the Building Industry Association (BIA); and has been designated a Certified Green Professional (CGP) by the National Association of Home Builders (NAHB).