

# ORTHODONTIC OFFICE DESIGN

## Creating Your Next Office

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The average orthodontist will move to a new office or do a major remodeling or redesign of an existing office two or three times during a career. An orthodontist's first office, usually leased and relatively small due to budget constraints, may have a longevity of five to seven years. The doctor will then need a second office for a variety of reasons, all of which add up to the possibility of greater financial reward. These factors may include:

### External

- Demographics—proximity to schools, hospitals, growing neighborhoods, and referring dentists
- Image enhancement offered by an attractive building (Fig. 1)
- Better visibility, parking, and signage (Fig. 2)

### Internal

- Ambiance conveying the message that "exceptional care is rendered here" (Fig. 3)
- Reception area providing adequate seating and



Fig. 1 Orthodontist's image can be enhanced by attractive building such as office of Dr. Catherine Bishop, Moline, IL.



Fig. 2 Highly visible signage of Dr. Frank Stich, Coppell, TX, at right angle to traffic.



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Fig. 3 Ambiance in office of Dr. Jay Hughes, Indianapolis, conveys message that "exceptional care is rendered here".

warm, friendly decor (Fig. 4)

- Expanded business-reception complex
- Addition of a private exam-treatment coordinator center
- Better traffic flow throughout the office
- Space for more working dental chairs
- Exciting operatory view
- Improved staff amenities
- Centrally located dry laboratory or sterilization area (Fig. 5)
- Room to implement new marketing ideas
- Ability to make use of the latest computer systems
- Elimination of crowded areas and addition of internal storage

There are four general categories of projects that may be involved in creating your next office:

1. Remodeling the existing facility
2. Adding on to the existing facility
  - a. Modest one-or-two-room addition
  - b. Addition with extensive square footage
3. Moving to a new location
  - a. Shopping center/strip mall
  - b. Medical complex with fixed perimeter
  - c. Stand-alone, high-visibility house or business location
4. New construction
  - a. Leasehold, with limited input in the project
  - b. Ownership, with complete control of financing, development, and construction

### The Design Team

To achieve the basic goals envisioned for your new office, to guarantee a successful project, and to ensure a smooth transition, you will need the best professional help you can get. Be willing to pay for it. You will end up thousands of dollars ahead, reduce frustration, and conserve valuable time by avoiding a series of major changes or redesigns.

The design team can include, but is not limited to, an orthodontic office design specialist, an architect, an interior decorator, and the building contractor. Proper selection of these individuals is the most important single step in the entire



**Fig. 4** Reception area of Dr. Richard Novick, El Paso, TX, offers adequate seating and warm, friendly atmosphere.



**Fig. 5** Convenient central dry lab combined with spacious on-deck alcove in office of Dr. Jay Hughes, Indianapolis.

design process. These people must have your complete trust, and therefore should demonstrate a proven record of experience and achievement in their fields.

Your design team should provide a wealth of ideas to supplement your own concepts of what you want your office to be. Be wary of anyone whose ego might resist taking the advice of other specialists at critical phases of the project. There will be times when a team member may temporarily have a dominant role—for instance, in the development of the basic floor plan—but the efforts of the entire team will ultimately blend into the overall construction.

The architect's fee is usually subdivided according to the five phases of a typical project:

1. Schematic design
  - a. Soft-line drawings
  - b. Final hard-line drawings
2. Design development
  - a. Site and parking plans
  - b. Preliminary exterior elevations
  - c. Reflected ceiling plan
3. Construction documents
4. Bidding phase
5. Construction phase

The fee is determined by one of two basic methods. An open-ended agreement calls for a percentage of the cost of the building at completion. Although it might appear that the architect could benefit by increasing the cost of the project, a "not to exceed" clause can give the owner confidence and protection. In fairness, however, a "not to exceed" clause should account for the possibility that the project's scope might grow, with the approval of the orthodontist, as the design develops. The second method, which we generally recommend, is a fixed fee for the total project once the cost has been established.

Architects are talented and well-trained professionals, but few of them have any experience in the dental field, not to mention orthodontics. Therefore, the doctor may need to put in considerable time with the architect, who will need to carefully observe the systems and work patterns used by the orthodontist and staff in the operator.

If the doctor is concerned about the architect's expertise and does not want to take a chance of wasting time on what might be an expensive experiment, hiring one of the several established orthodontic design companies can be a solution. After developing the hard-line schematic design with the orthodontic design consultant, you can have the remaining construction drawings done by a competent local architect, who will then be in charge of the project. Every architect commonly relies on the expertise of specialists such as engineers and electricians, so the addition of an orthodontic design consultant should not be problematic. If the doctor and

architect agree, an adjustment can be made in the architect's fee, since considerable time will be saved.

Most orthodontic design companies can go even further and provide the services of their own on-call architects for preparation of the construction drawings. This allows you to take a complete set of drawings to the contractor, who then applies for a work permit to start construction. Orthodontists who are renting space in malls or medical buildings often take this approach. It does require more of the doctor's time in supervision, however, and a reputable and experienced builder is essential. If this route is chosen, it will be critical to have a written plan for dealing with "change orders"—the changes in the cost, scope, or schedule of the project that inevitably occur during construction. This is the area where disputes are most likely to arise and cost overruns to occur.

Your lawyer should review any written agreement with your contractor. Contractors often use forms that may be slanted in their favor. Another advantage to working with an architect is that you can insist that your contractor follow the standard American Institute of Architects contract system. The AIA agreement, which is fair and protects the owner, contractor, and architect equally, has stood the test of countless legal cases over the years. It also handles the problem of "change orders" in a way that will reduce stress for both owner and contractor.

When dealing with building contractors who work under a fixed fee, you must be careful not to lose control of the project. Faced with the pressures of running your practice, you might overlook important details during construction. Therefore, it is important that your contractor feel obligated to satisfy the owner-architect team throughout the project.

### Required Drawings

Another function of the design team will be to cope with the current technical standards imposed by local governments. Your professionals will shepherd the project through the bureau-

cratic maze from the initial design phase until the day you are issued an official certificate of occupancy.

This is an area where confusion typically sets in for owners who are unfamiliar with the building trade. The most important and most time-consuming drawing to develop is the hard-line schematic design of the basic floor plan. This document, conceived by you and your orthodontic consultant or architect, becomes the foundation for all subsequent drawings. The number of remaining documents required depends on the scope of the building program and the local building department's policies.

Gone are the days when a building contractor could present free-hand, soft-line sketches of a parking lot and a building perimeter with a floor plan and receive a permit to start construction. Many local planning boards are now fearful of litigation that may arise from approval of projects based on limited information. City planning commissions have always adhered to their local codes, but ever-increasing and overlapping federal legislation, such as the Americans with Disabilities Act, has now raised the standards of acceptability before building permits are issued. While legislative requirements may be less restrictive in smaller communities than in metropolitan areas, professionally drawn documents are now required in almost all areas of the country.

The documentation required by building departments for simple jobs may appear to be a roadblock to your creative process. In an expensive project such as a dental building, however, the permit procedure can protect you by ensuring that certain necessary steps are followed by the contractor. This is especially true if you are dealing solely with a contractor who has in-house architectural and engineering services.

If you are building a new office, highly detailed schematic and construction drawings are imperative. Although significant expense and doctor time will be involved, it is money well spent, because the drawings are legal contracts that bind your contractor to build to their specifications.<sup>1</sup> Anyone who has been through a con-



**Fig. 6** Site plan of Dr. Catherine Bishop, Moline, IL, indicating landscaping, building location, and roof lines.

struction project, no matter how small, will attest that problems are much easier and cheaper to deal with when they are documented in writing rather than verbally.

Depending on the size of your project, your documents will usually be developed in the following order.

### Site and Parking Plan (Fig. 6)

An accurate site plan is important to the contractor for accurate bidding and for use throughout the building program. This drawing is customarily done at a scale of  $\frac{1}{8}'' = 1'$  for smaller projects and  $1'' = 20'$  for larger ones.

The manager of a shopping mall or medical building will usually provide a site drawing to prospective tenants. Be cautious about sharing parking with other tenants, especially if space appears to be marginal. Because of patient volume and staff size, the parking required by an orthodontic office often exceeds local code requirements. What appears to be adequate parking on a shared plan for most tenants might be inadequate for you.

Before you purchase a lot, especially if it is limited in size, you should have a preliminary site feasibility study conducted by an architect or an experienced builder. This free-hand site sketch should verify the adequacy of parking spaces, building area, setbacks, and site access. Factors such as terrain setbacks or easements can shrink the usable space for a building or parking, perhaps rendering it unacceptable for your needs. The terrain, whether rugged, undulating, or flat, can be critical. Property line setbacks define where a building can be placed and the distance of parking from the lot line. The building location can also be affected by utility easements that may border or cross the property.

Once the parcel of land is considered acceptable and purchased, you will need a schematic hard-line site plan to present to the building department. This will be used to ensure zoning compliance and will be developed into a final site plan as the design process continues. The site plan includes the location and general outline of the building, property lines, setbacks from these lines, utilities on and adjacent to the site, contour lines for drainage and grading, locations of any water retention ponds, curb cuts to the parking lot, numbered parking spaces, and a general landscaping concept. In some instances, local covenants govern the usage of wooded lots, and a special architectural landscape drawing may be needed for a tree-removal plan. Exceptionally rugged terrain may require consultation with engineers regarding building specifications and perhaps a special grading plan for the building department.

### Preliminary Soft-Line Drawing (Fig. 7)

Before the final hard-line schematic floor plan can be drawn, the doctor and the office design consultant or architect will work together to produce a soft-line drawing. Many preliminary ideas are expressed on paper with an erasable soft-lead pencil—hence the name. This sketch is not to exact scale, but should be close to  $1/4" = 1'$ , the scale normally used for construction drawings. Straying too far from that scale

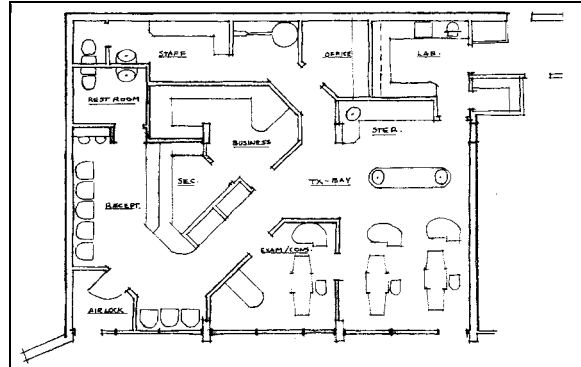


Fig. 7 Soft-line preliminary floor plan for Dr. Karl Yorke, Netanya, Israel.

could be deceiving and even lead to costly redesigns.

During the soft-line stage, brainstorming predominates; there should be no restrictions that hinder creative thought or expressions of the doctor's ideas. Creating a new environment for the way you wish to practice will be time-consuming, sometimes frustrating, but it can also be fun.

Soft-line drawings are governed by the perimeter, shape, and square footage of the available space. This is the time to build in smooth-flowing traffic patterns and make any changes needed in the operatory design to improve work habits. If the orthodontist understands the staff's work patterns and the ideal placement of cabinetry, delivery systems, and chairs, the soft-line meetings can be more productive and less time-consuming. These sessions can eliminate later redesigns, since all subsequent construction drawings are based on what architects call the basic "footprint". In addition, a thorough knowledge of ideal chair and cabinet relationships avoids wasting space in designing the open-bay operatory—a common mistake in larger offices.

Even in new construction projects with unlimited space available, prudence should be the rule. Larger is not necessarily better, nor does it guarantee greater efficiency. The more square footage saved by a designer, the more money the doctor saves. Because of the current healthy

economy and higher construction costs, it is not unusual to spend \$75-85 per square foot for leasehold improvements, excluding dental equip-

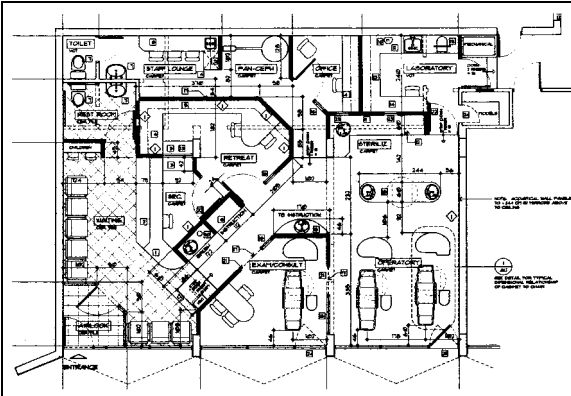


Fig. 8 Hard-line schematic drawing for Dr. Karl Yorke, Netanya, Israel.

ment. For a building on slab, excluding land and equipment, the cost can run \$135-145 per square foot.<sup>2</sup> Therefore, for every 100 square feet saved, the doctor can save more than \$13,500.

### Hard-Line Schematic Drawing (Fig. 8)

The hard-line drawing precisely applies the ideas developed during the soft-line stage within the physical restrictions of the available square footage. Using drafting tools, this final floor plan is hard-lined in pencil to an accurate scale, usually  $\frac{1}{4}'' = 1'$ . All interior and exterior walls become fixed. Exact sizes of all rooms are established, with special emphasis on the open-bay operator, which usually takes up the greatest percentage of the total square footage.

Once the size, shape, and perimeter of the floor plan have been established, some prelimi-

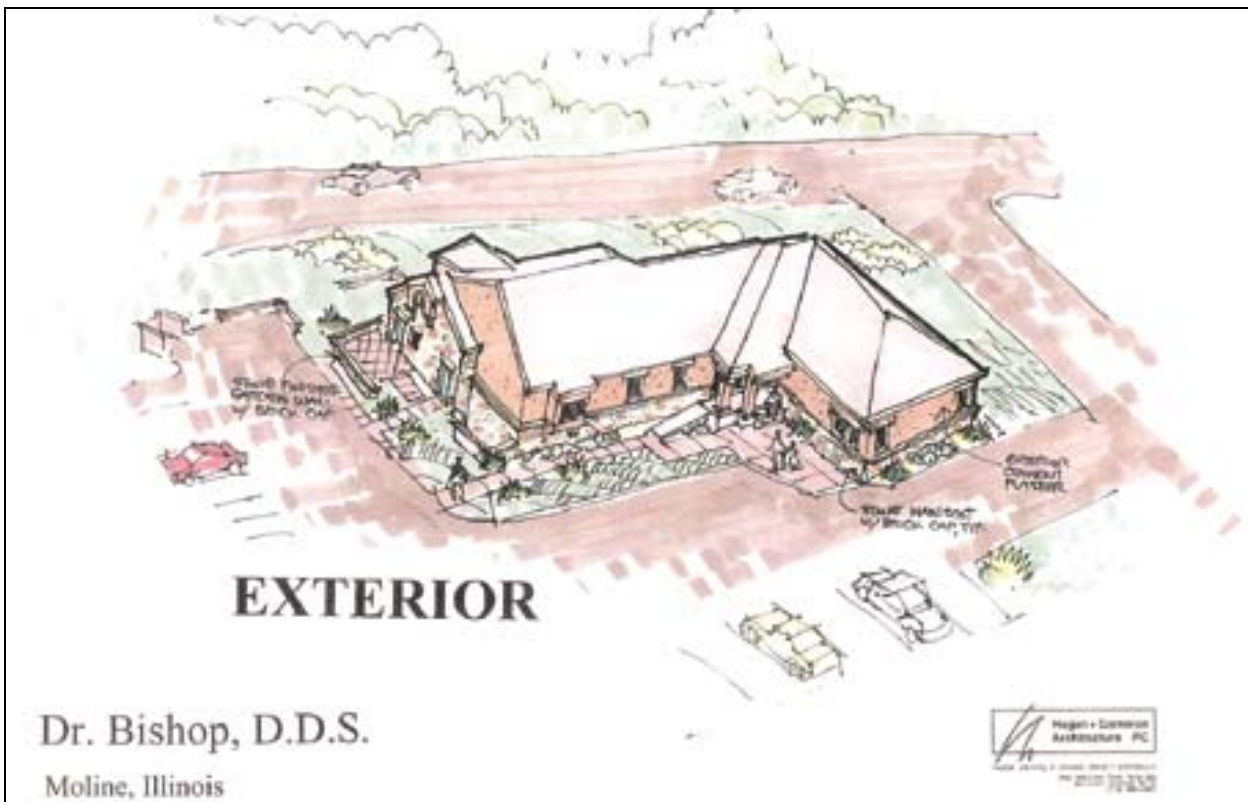


Fig. 9 Color sketch of preliminary elevations and building site placement for Dr. Catherine Bishop, Moline, IL.



Fig. 10 Color rendering of office building project for Dr. Michael Ruelf, Tampa Bay, FL.

nary exterior elevations can take form. The orthodontist and staff will naturally be curious about how the building will look on the site (Fig. 9). These sketches can give a sense of the project without going into great detail, helping determine the style that will be acceptable to the doctor. More details are incorporated as roof lines, exterior materials, window casement styles, and so on are determined. A final color drawing of your future office can create great interest and anticipation among your patients and staff (Fig. 10).

### Design Development

Design development is the phase between schematic design and preparation of the construction documents. It is a critical part of the design process, because it transforms ideas into buildable solutions. Design development is the overall coordination of proposed project systems, including structural, mechanical, electrical, and technological.

An extra feature that some office designers include, beyond the schematic drawing phase, is a preliminary reflected ceiling plan (Fig. 11). This drawing shows the proposed locations of recessed lighting, light fixtures in the operatory in relation to dental chairs, suspended ceiling grids, and soffits. It becomes the basis for the

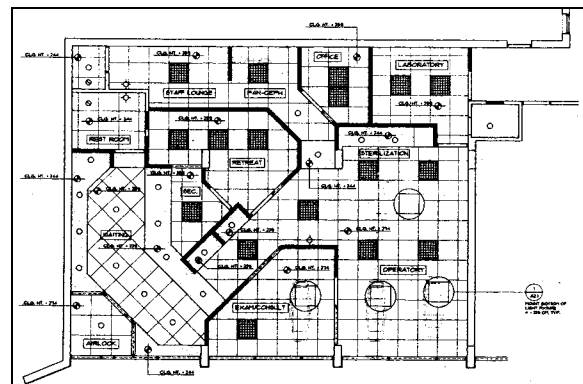


Fig. 11 Reflected ceiling plan for Dr. Karl Yorke, Netanya, Israel.



**Fig. 12 Tiered perimeter soffit design blends with unique central laboratory-on deck area to define operatory space of Dr. Jay Hughes, Indianapolis.**

electrical and mechanical engineers to prepare their bids and begin their work.

Another benefit of the reflected ceiling plan is that it helps the doctor make decisions about interior design that can add to the beauty of the office. For example, in buildings with flat, suspended ceilings, exciting soffit treatment can transform an ordinary office into a special one (Figs. 3,5,12).

During design development, floor plans and reflected ceiling plans take on permanent dimensions; elevations and building sections begin to define the volume of the project. Upon resolution of all project systems, the design is ready to be documented in a way that will be comprehensible to the building trade.

### Construction Documents

Construction documents represent the final working drawings and specifications for a project. Working drawings are your specific instructions to the contractor. They define your design, while specifications define products and materials. Both are essential information in a successful building project.

For an interior remodeling project, the fol-

lowing drawings are typically required:

1. Floor plan
2. Reflected ceiling plan
3. Interior elevations
4. Details and schedules
5. Mechanical plans
6. Electrical plans
7. Plumbing plans

For a new building, the following additional drawings will be needed:

8. Exterior elevations
9. Building and wall sections
10. Structural drawings

### Building Inspection

During various phases of construction, building inspectors will check work such as plumbing, electrical, heating, and ventilation to ensure that it passes code. After final inspection, a certificate of occupancy is issued that allows you to open for business. For your final approval of the work, a “punch list” will be used by you, the architect, and the builder to check off finished and unfinished items. Final payment should be held until all work is completed to your satisfaction. A reputable builder will be eager to make certain that all conditions have been met.

After final approval, with your certificate of occupancy in hand, you, your staff, and your patients can begin to enjoy your exciting new work environment. The frustrations of planning and construction are behind, a positive new image of the practice is ahead, and you are ready to practice orthodontics in a unique office that you have created.

### REFERENCES

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