

Evaluation of Barrier Removal Costs Associated with 2004 Americans with Disabilities Act (ADA) Accessibility Guidelines

by

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for



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This report was developed under a contract with the Small Business Administration, Office of Advocacy, and contains information and analysis that was reviewed and edited by officials of the Office of Advocacy. However, the final conclusions of the report do not necessarily reflect the views of the Office of Advocacy. This report was peer-reviewed consistent with Advocacy's data quality guidelines.

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by Andy Bollman, E. H. Pechan & Associates, Durham, NC 27707

2007. [50 pages.] Under contract SBAHQ-03C0020

Background

The U.S. Department of Justice (DOJ) is considering amendments to the requirements for businesses to remove physical barriers to accessibility under the Americans with Disabilities Act (ADA). In 2004 the Architectural and Transportation Barriers Compliance Board (Access Board) developed recommendations to the DOJ for revised ADA accessibility guidelines (ADAAG). The 2004 ADAAG made recommendations for significant changes to the ADAAG that were adopted in 1992. In 1992 many small business owners commented that the accessibility requirements were unduly burdensome, particularly requirements to remove “architectural barriers” whenever such removal is “readily achievable.” The 2004 ADAAG standards have been similarly criticized by small firms for mandating marginal changes in accessibility after many small business owners struggled for years to come to terms with the 1992 standards.

Small business was critical of the 2004 ADAAG standards for two reasons that echo concerns from 1992. First, the scope of the standards is broad for small firms in many industries. For instance, a small retailer or restaurant owner may have to make many modifications to remove architectural barriers, despite being a very small operation with only a handful of employees. Second, the primary reason that a small firm may be subject to ADA barrier removal is that the “readily achievable” standard is ambiguous. Many small firms simply do not know what their liability under the rule is, and may additionally fear litigation that arises because of ambiguities in standard applicability.

Overall Findings

Disparities in regulatory compliance costs between large and small firms are relatively common. A 2005 Office of Advocacy study concluded that small businesses paid nearly 1.5 times as much per employee as large firms to comply with regulations. In industries such as manufacturing, and for certain subsets of regulations, such as environmental rules, cost disparities can be many times greater. This report examines the costs of complying with the architectural barrier removal requirements set out in the 2004 ADAAG. Separate costs for small firm buildings and large firm buildings are developed to examine the magnitude of small firm costs, and whether small firms are expected to face disproportionately higher costs than large firms. The report finds that small firms face substantial costs from adoption of the barrier removal requirements in the 2004 ADAAG, and that typical small firm buildings incur significantly higher costs than large firm buildings on both a per square foot and per employee basis. The difference in costs per square foot or per employee is based largely on the fixed cost nature of most barrier removal projects.

Highlights

- Typical small firms will face total costs of between \$82,449 (typical small firm restaurant building) and \$275,375 (typical small firm hospital building) to comply with the new guidelines for barrier removal;
- When placed on a per square foot basis, small firm building barrier removal costs range from \$2.04 (hospitals) to \$18.25 (offices) per square foot;

- Typical small firm building costs are 2.2 to 4.1 times greater per square foot than large firms in the same industry and using the same but larger building type;

- On a per employee basis, the typical small firm building costs range from \$499 per employee for a small hospital building to \$17,458 per employee for a small hotel building. These costs range from about 1.5 to 7.9 times those faced by larger firms.

Methodology

The researchers used data on construction project costs from a nationally representative, industry standard database to calculate the costs of barrier removal modifications mandated by the new accessibility guidelines in the 2004 ADAAG. Further data relating firm size and structure size were then incorporated to form representative building and firm types by industry. Total costs were calculated by aggregating the costs of the various projects required to achieve the new accessibility standards.

This report was peer-reviewed consistent with Advocacy's data quality guidelines. More information on this process can be obtained by contacting the Director of Economic Research at advocacy@sba.gov or (202) 205-6533.

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**EVALUATION OF BARRIER REMOVAL COSTS ASSOCIATED WITH
2004 AMERICANS WITH DISABILITIES ACT (ADA)
ACCESSIBILITY GUIDELINES**

FINAL REPORT

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The Office of Advocacy, an independent office within the U.S. Small Business Administration, has primary responsibility for government-wide oversight of the Regulatory Flexibility Act of 1980 (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). The principal goal of the RFA is to identify, and, if possible, lessen the burdens Federal regulations place on small entities. The Office of Advocacy sponsored this report under contract SBAHQ-03C0020. This report was developed under a contract with the Small Business Administration, Office of Advocacy, and contains information and analysis that were reviewed and edited by officials of the Office of Advocacy. However, the final conclusions of the report do not necessarily reflect the views of the Office of Advocacy.

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ACRONYMS AND ABBREVIATIONS

ABA	Architectural Barriers Accessibility
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ANPRM	Advance Notice of Proposed Rulemaking
BLS	Bureau of Labor Statistics
CBECs	Commercial Building Energy Consumption Survey
DOJ	U.S. Department of Justice
EIA	Energy Information Administration
IRS	Internal Revenue Service
NAICS	North American Industry Classification System
Pechan	E.H. Pechan & Associates, Inc.
RFA	Regulatory Flexibility Act of 1980
SBA	U.S. Small Business Administration
SBREFA	Small Business Regulatory Enforcement Fairness Act
TPJ	TPJ Associates

EXECUTIVE SUMMARY

The U.S. Department of Justice (DOJ) is considering amendments to the requirements for businesses to remove physical barriers under the Americans with Disabilities Act (ADA). In 2004 the Architectural and Transportation Barriers Compliance Board (Access Board) submitted recommendations to the DOJ for revised ADA accessibility guidelines (ADAAG). The 2004 ADAAG made recommendations for significant changes to the ADAAG that were adopted in 1992. In 1992 many small business owners commented that the accessibility requirements were unduly burdensome because small businesses had virtually the same requirements as large businesses, although large firms were able to spread the significant fixed costs of compliance over greater sales volumes.

Disparities in regulatory compliance costs between large and small firms are relatively common. A 2005 Office of Advocacy study concluded that small businesses paid nearly 1.5 times as much per employee as large firms to comply with regulations (Crain, 2005). In industries such as manufacturing, and for certain subsets of regulations, such as environmental rules, cost disparities can be many times greater. This report examines the costs of complying with the architectural barrier removal requirements set out in the 2004 ADAAG and forthcoming in DOJ's interpretation.¹ Separate costs for small firm buildings and large firm buildings are developed to examine the magnitude of small firm costs, and whether small firms are expected to face disproportionately higher costs.

We find that small firms face substantial costs from adoption of the barrier removal requirements in the 2004 ADAAG, and that typical small firm buildings incur significantly higher costs than large firm buildings on both a per-square foot and per-employee basis. Using construction cost data from RSMMeans, we find that a typical small firm building will face total costs of between \$82,449 (typical small firm restaurant building) and \$275,375 (typical small firm hospital building) to comply with the new guidelines for barrier removal.^{2,3} When placed on a per-square foot basis, small firm building barrier removal costs range from \$2.04 (hospitals) to \$18.25 (offices) per square foot. While large firms also face significant costs for barrier removal, typical small firm building costs are 2.2 to 4.1 times greater per square foot. On a per-employee basis, the typical small firm building costs range from \$499 per employee for a small hospital building to \$17,458 per employee for a small hotel building. These costs range from about 1.5 to 7.9 times those faced by larger firms.

¹ Title III also contains requirements for accessibility in new construction and building alterations/renovation. This report examines only the barrier removal requirements set out in the 2004 ADAAG and forthcoming in DOJ's interpretation.

² Note that all cost estimates reported in this report are treated as one-time cash payments, and as such, represent nominal, undiscounted dollars (i.e., costs are not treated as cash streams discounted over the useful life of the structure). This approach also ignores any maintenance and operating costs.

³ As detailed later in the report, two sets of cost estimates were developed in this study—"baseline" costs taken from RSMMeans data, and estimates that include anticipated additional cost mark-ups. The values cited in this section are the conservative baseline estimates.

I. INTRODUCTION AND PURPOSE

The Americans with Disabilities Act (ADA) regulations went into effect in 1992. The ADA (42 U.S.C. 12186) requires the Architectural and Transportation Barriers Compliance Board (Access Board)⁴ to “issue minimum guidelines” for accessibility. In 2004 the Access Board issued a revised set of standards, the 2004 ADA Accessibility Guidelines (2004 ADAAG), that would significantly change many of the accessibility standards for private sector businesses under Title III of the Act (69 FR 44084, 2004). In 2004, the U.S. Department of Justice (DOJ) issued an Advance Notice of Proposed Rulemaking (ANPRM) seeking comments on the 2004 ADAAG, while stating that “it anticipates proposing the revised ADA Standards for new construction and alterations that are consistent with the 2004 ADAAG” (69 FR 58768, 2004 at pg. 58771). The DOJ also noted that it has the sole authority for implementing the Title III requirement that public accommodations eliminate existing architectural barriers where it is readily achievable to do so.

In response to the ANPRM, small businesses commented upon the potential burden of the 2004 ADAAG requirements. The Office of Advocacy summarized many of small businesses’ concerns in Advocacy comments on the ANPRM (Sullivan, 2005). Small firms are most concerned with the requirement in Title III to perform “architectural barrier removal” from existing structures when such activity is “readily achievable.” The ADA defines “readily achievable” as “easily accomplishable and able to be carried out without much difficulty or expense” (42 U.S.C. 12181(9)). The “readily achievable standard” is “determined on a case-by-case basis in light of the particular circumstances” of each business, such as the financial resources of the entity (DOJ, 1993a). Small businesses have commented that the vagueness in the “readily achievable standard” is both difficult and expensive to follow, because of the DOJ’s lack of useful guidance on what constitutes a barrier and what kind of barrier removal is readily achievable. This report examines the costs of ten new/revised barrier removal requirement elements in the 2004 ADAAG. It is important to note that the DOJ may choose not to require some of these requirements in its forthcoming proposed rulemaking.

II. BACKGROUND

Title III of the ADA requires the adoption of enforceable minimum accessibility standards at places of “public accommodation” and “commercial facilities.” Under the ADA, “public accommodations” include a broad range of establishments (both for-profit and nonprofit) that serve the public, such as hotels, restaurants, theaters, museums, retail stores, private schools, banks, and doctors’ offices. As noted in DOJ’s Barrier Removal Technical Assistance guidance document, there is no requirement to remove barriers if the business is only a place of employment that is not open to the general public. Such businesses are “commercial facilities” under the ADA (DOJ, 1996). The obligations of Title III extend only to private entities – state

⁴ The Access Board is an independent federal agency charged with developing accessibility guidelines for facilities and transit vehicles covered by the ADA, providing technical assistance and training on these guidelines; and conducting research to support and maintain the guidelines.

and local government entities are public entities covered by Title II of the ADA, which is not the subject of this report.⁵

Although both public accommodations and commercial facilities are subject to the ADA accessibility requirements for new construction and alterations, the ADA's architectural barrier removal requirements apply only to public accommodations. A key distinction between the requirements for new construction/alterations and the requirements for existing facilities is that the latter are triggered upon rule implementation, while the former affects entities only when they choose to build new facilities or make alterations.⁶ In particular, new construction built after January 26, 1993 and alterations made to facilities after January 26, 1992 must be "readily accessible" to and usable by individuals with disabilities.⁷ The term "readily accessible" means, "with respect to a facility or a portion of a facility, that it can be approached, entered, and used by individuals with disabilities (including mobility, sensory, and cognitive impairments) easily and conveniently."⁸

The ADA's barrier removal requirements have been of particular concern to small businesses. The ADA requires architectural barrier removal from existing public accommodations when "readily achievable." Small business concerns with the barrier removal requirements stem from three interrelated elements: (1) costs associated with time spent attempting to understand DOJ's vague barrier removal requirements;⁹ (2) legal liability issues that arise from this lack of guidance;¹⁰ and (3) the fact that it is more costly to remove architectural barriers in existing structures than to comply with accessibility requirements when building a new building or renovating an existing facility.

According to the DOJ, determining if barrier removal is readily achievable is necessarily a case-by-case judgment that involves assessment of many factors:

⁵ Title III also covers private entities primarily engaged in transporting people. The Department of Transportation has issued regulations implementing that section of Title III.

⁶ Under the ADA, an alteration is any change that affects usability. It includes remodeling, renovation, rearrangements in structural parts, and changes or rearrangement of walls and full-height partitions. Normal maintenance, reroofing, painting, wallpapering, asbestos removal, and changes to electrical and mechanical systems are not "alterations," unless they affect usability (DOJ, 1993b).

⁷ ADA Title III, Sec. 36.401, 36.402.

⁸ ADA Title III-Appendix B to Part 36—Preamble to Regulation on Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities, July 26, 1991.

⁹ "Small businesses are supposedly held to lower standards than large corporations and are required only to comply with the ADA in ways that are 'readily achievable.' But that term is defined on a case-by-case basis. 'It's really difficult for a small business to keep up with all the rules and regulations' and court decisions, says William Anthony, a Florida State University management professor and expert on the ADA" (Martin, 2005).

¹⁰ "...it's up to entrepreneurs to stay abreast of how the broadly written statute is interpreted in courts around the country. Those who don't keep up risk getting sued—and even if they win in court, they often lose time and legal fees and suffer damage to their reputation" (Martin, 2005).

-
1. The nature and cost of the action;
 2. The overall financial resources of the site or sites involved; the number of persons employed at the site; the effect on expenses and resources; legitimate safety requirements necessary for safe operation, including crime prevention measures; or any other impact of the action on the operation of the site;
 3. The geographic separateness, and the administrative or fiscal relationship of the site or sites in question to any parent corporation or entity;
 4. If applicable, the overall financial resources of any parent corporation or entity; the overall size of the parent corporation or entity with respect to the number of its employees; the number, type, and location of its facilities; and
 5. If applicable, the type of operation or operations of any parent corporation or entity, including the composition, structure, and functions of the workforce of the parent corporation or entity (DOJ, 1993a).

The vagueness of the DOJ guidance hinders achievement of accessibility goals because the expense of small business owners to hire attorneys or ADA consultants to interpret “readily achievable” in light of their specific circumstance causes many small businesses “...to wait until someone raises an issue about accessibility before taking any action” (Langer, 2005 at pg. 5). When combined with the ADA provision that allows for recovery of attorney fees, the ambiguity of the DOJ guidance has also provided an incentive for litigants to file large numbers of lawsuits against small business owners. In *Rodriguez v. Investco*, the district court noted that this situation has created a “cottage industry” for the plaintiff’s bar [*Rodriguez v. Investco*, L.L.C., 305 F. Supp. 2d 1278, 1280-81 (M.D. Fla. 2004)]. The court went on to further note that these lawsuits are “essentially driven by economics – that is, the economics of attorney’s fees.”¹¹ Small businesses that have made good faith efforts to comply with the Title III barrier removal requirements, understandably fear that the vague definition of “readily achievable” leaves them vulnerable to undeserved litigation.

The ADA architectural barrier removal requirements affect entities that own, lease, operate, or lease out to a business that serves the public. The ADA therefore holds both landlords and tenants liable to third parties for ADA noncompliance.¹² Most small businesses are likely to be the tenants of spaces and as such it is important to understand that they are equally liable for the costs and the legal liability that stems from the architectural barrier removal requirements.

In 2004 the Access Board released new accessibility guidelines (2004 ADAAG), which, if adopted by DOJ as an update to the 1992 ADA guidelines, carry the potential for significant costs for small businesses. The 2004 ADAAG failed to develop estimates for these costs. This

¹¹ Further discussion of this issue is provided in the article, “Civil Rights: The ADA Opening Doors for the Plaintiff’s Bar: How Ambiguities in Title III Inhibit Access, Increase Litigation, and Hurt Business,” *Engage: The Journal of the Federalist Society’s Practice Groups*, Vol. 7. No. 1, by Karen R. Hamed and Elizabeth Gaudio.

¹² This rule of joint and several liability for landlords and tenants is expressed in the legislative history of the ADA: “this provision makes it clear that the owner of the building which houses the public accommodation, as well as the owner or operator of the public accommodation itself, has obligations under this Act. For example, if an office building contains a doctor’s office, both the owner of the building and the doctor’s office are required to make readily achievable alterations” (H.R. Rep. No. 101-485 (III), at 55-56 (1990), *reprinted in* 1990 U.S.C.C.A.N. 445, 478-79; see also H.R. Conf. Rep. No. 101-56, at 76, *reprinted in* 1990 U.S.C.C.A.N. 565, 585).

study examines this issue by building “bottom-up” 2004 ADAAG compliance cost estimates for existing public accommodations, using cost data that the construction industry relies upon for estimating the costs of renovating structures.

To evaluate whether the barrier removal costs of the 2004 ADAAG fall disproportionately on small firms, this study estimates separate compliance costs for representative buildings used by small firm establishments and those used by large firm establishments. Because the anticipated barrier removals can differ by the use of the structure, and therefore by the nature of the business using the structure, we looked at a sample of different structure types, driven by typical types used by small entities. Specifically, we looked at office buildings used by a wide range of businesses, retail spaces typically used by non-mall-located retail firms, a small restaurant or bar (virtually all restaurants and bars are small businesses), and two more dedicated structure types: hospitals and hotels. With the exception of restaurants/bars, we examined two model structures in each category, one typical of large firm establishments and another representing small firm establishments (only a small restaurant/bar was modeled in this study). To perform the barrier removal cost estimates, we used a representative national barrier removal project cost data set that is used by the construction industry.

III. ESTIMATION OF BARRIER REMOVAL COSTS

This section presents the methods and data sources used to develop the barrier removal cost estimates in this study. As noted above, the ADA’s architectural barrier removal requirements are of particular concern because barrier removal is required upon rule implementation rather than when a firm chooses to undertake other construction activities.

A. Overview of Methods

Based on small business comments received by Advocacy, we focused on the following ten barrier removal requirement elements that are new/revised under the 2004 ADAAG:

- Modify employee work areas (203.9);
- Modify public entrances (206.4.1);
- Modify reach ranges (308.3.1);
- Modify walking surfaces (403.3);
- Modify water closets (604.3.2);
- Install or modify knee and toe clearances (904.4.2);
- Install or modify changing rooms (222.1; 803; 803.4);
- Modify restaurant or bar areas (226.1);
- Install portable alarms (702.1); and
- Install visible fire alarms (224.5).

Table 1 presents a comparison of the architectural barrier removal requirements of the current DOJ standards for these ten elements with the requirements of the 2004 ADAAG. The last column in the table summarizes small business-related comments on the 2004 ADAAG design changes for these elements.

Advocacy contracted with TPJ Associates (TPJ) to model the barrier removal activities associated with existing structure compliance with the 2004 ADAAG. TPJ used “Means Repair and Remodeling Cost Data 2007” (RSMMeans) as a resource to estimate the per-unit costs of these activities (RSMMeans, 2007). The RSMMeans data provides unit prices developed from ongoing research of material, labor, and equipment costs, weighted to their use in typical construction in the United States (all of the costs presented in this report represent national average costs). With a few exceptions, TPJ developed per-unit costs for barrier removal activities that are based on the number of floors that are to be renovated in the building. For example, TPJ estimated hospital barrier removal costs of \$2,535 for lowering one employee work area urinal on each hospital floor. E.H. Pechan & Associates, Inc. (Pechan) then computed barrier removal costs by building type/firm size by adjusting TPJ’s per-unit costs to reflect Pechan’s estimates of the average number of floors associated with buildings typically used by small firm establishments and buildings typically used by large firm establishments. Pechan developed the number of floor estimates, as well as estimates of building square footage and employment, from commercial sector data available from the *2002 Economic Census* and the *2003 Commercial Building Energy Consumption Survey* (Census, 2007 and Energy Information Administration [EIA], 2007a).

The RSMMeans cost estimates are for work in an unobstructed location during normal business hours. Using information supplied by TPJ Associates, this study reports two sets of cost estimates—estimates reflecting the baseline RSMMeans data, and estimates that incorporate the estimated costs for three typical mark-ups applied in the construction industry.¹³ TPJ provided 2004 ADAAG barrier removal costs associated with the following types of buildings, each of which are often owned/leased by small firms: hospital, hotel, restaurant, retail, and office.

¹³ A 10 percent “general conditions” mark-up applied to the baseline RSMMeans-based costs; a 15 percent “general contractors overhead and profit” mark-up applied to the post-general conditions mark-up costs, and a 20 percent “contingency” mark-up applied to the post-general contractors overhead and profit mark-up costs to account for potential additional costs resulting from individual site-specific circumstances (e.g., work may have to be done outside normal hours to avoid interrupting business activity).

Table 1. Comparison of Current and 2004 Accessibility Guidelines Related to Architectural Barrier Removal

Element	Current DOJ Standards	2004 ADAAG	Small Business Comments*
1. Employee Work Areas	4.1.1(3) These guidelines do not require that any areas used only as work areas be constructed to permit maneuvering within the work area or be constructed or equipped (racks or shelves) to be accessible.	203.9- For first time, would require accessibility within employee-only areas of all facilities, regardless of whether the employer was open to the public or not. In its ANPRM, the DOJ has stated that it may continue to exempt employee work areas from any obligation to retrofit pursuant to the readily achievable barrier removal requirement.	The current DOJ barrier removal standard for employees' work areas requires small business employers to provide accessible approaches, entrances, and exits to the work areas, but explicitly excludes the work area itself from disabled access requirements. Small businesses recommend that the DOJ continue to exempt employee work areas. This recommendation extends to these three new requirements: (1) accessible circulation paths through employee work areas (206.2.8), (2) means of egress (207.1); and (3) wiring for visual alarms (215.2).
2. Public Entrances	4.1.3(8) The requirements in (a) and (b) below shall be satisfied independently: (a)(i) At least 50 percent of all public entrances shall comply with 4.14. At least one must be a ground floor entrance.	206.4.1- In addition to entrances required by 206.4.2 through 206.4.9, at least 60 percent of all public entrances to comply.	New standards would require small businesses with two public entrances to make both wheelchair-accessible. This provision should be exempt from the barrier removal requirement.
3. Reach Ranges	4.2.6. Side Reach- The maximum high side reach allowed shall be 54 inches and the low side reach shall be no less than 9 inches above the floor.	308.3.1 Side Reach Ranges- The high side reach shall be 48 inches maximum and the low side reach shall be 15 inches minimum above the finish floor or ground.	Thousands of businesses have lowered elements such as light switches, fire alarms and thermostats from traditional heights of 60" to 54" height provided for in the current ADA Standards. To require a subsequent retrofit would make the initial changes moot and is a waste of resources. This provision should be exempt from the barrier removal requirement.
4. Walking Surfaces	4.3.7. Slope- An accessible route with a running slope not greater than 1:20 ramp and shall comply with 4.8. Nowhere shall the cross slope of an accessible route exceed 1:50.	403.3 Slope - The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of walking surfaces shall not be steeper than 1:48.	The maximum slope has been changed from 1/50 to 1/48 slope. While this is a negligible change for new construction, it would impose substantial costs if a business were required to retrofit. This provision should be exempt from the barrier removal requirement.
5. Water Closets and Toilet Compartments		604.3.2	Overlap- When the door to the toilet room is placed directly in front of the water closet, the water closet cannot overlap the required maneuvering clearance for the door inside the room. The revised standard newly precludes an overlap of the lavatory into the space required of the water closet as permitted in the current ADA standards. This provision should be exempt from the barrier removal requirement.

Table 1 (continued)

Element	Current DOJ Standards	2004 ADAAG	Small Business Comments*
6. Knee and Toe Clearance		904.4.2. Forward Approach (as opposed to parallel approach)- a portion of the counter surface that is 30 inches long minimum and 36 inches high maximum shall be provided. Knee and toe space complying with 306 shall be provided under the counter.	The Revised ADA Guidelines require sales counters to provide toe clearance if the approach for wheelchairs is from the front, as opposed to a parallel approach. This requirement would seriously impact small retailers by eliminating high-value selling space located in front of sales counters. This provision should be exempt from the barrier removal requirement.
7. Changing Rooms	4.35.4- To make a dressing room wheelchair accessible, a retailer must provide clear floor space alongside the dressing room bench to allow a person using a wheelchair to make a parallel transfer on the bench.	222.1, 803, 803.4. Benches in Changing Rooms- Where dressing rooms, fitting rooms, or locker rooms are provided, at least 5 percent, but not fewer than one, of each type of use in each cluster... 803.4. A bench complying with 903 shall be provided within the room... 903.2. Clear Floor or Ground Space: Clear floor or ground space complying with 305 shall be provided and shall be positioned at the end of the bench seat and parallel to the short axis of the bench.	To make customer dressing rooms wheelchair accessible, a retailer currently must provide clear floor space alongside the dressing room bench to make parallel transfer onto the bench. The new rule requires retailers to provide clear floor space at the end of the bench seat and parallel to the short end of the bench. Clothing stores would likely be required to renovate at least 1 dressing room to move the clear floor space provided from the side to the end of the bench. This provision should be exempt from the barrier removal requirement.
8. Restaurant Bar Areas	5.2 Counters and Bars-Where food or drink is served at counters exceeding 34 in (865 mm) in height for consumption by customers seated on stools or standing at the counter, a portion of the main counter which is 60 in (1525 mm) in length minimum shall be provided in compliance with 4.32 or service shall be available at accessible tables within the same area.	226.1- Where dining surfaces are provided for consumption of food or drink, at least 5 percent of seating spaces and standing spaces at the dining surfaces shall comply with 902.	Currently, restaurants and bars with counter or bar areas are required to provide 60-inch length and that is no more than 34 inches in height for patrons in wheelchairs. However, bars and restaurants may provide service at tables in the same area. The new rules would eliminate the provision allowing for table service at tables in the same area, and instead require 5% of any bars or counter service to be no more than 34 inches in height. This provision should be exempt from the barrier removal requirement.
9. Portable Alarms	9.3.2 Equivalent Facilitation- For purposes of this section, equivalent facilitation shall include the installation of electrical outlets (including outlets connected to a facility's central alarm system) and telephone wiring in sleeping rooms and suites to enable persons with hearing impairments to utilize portable visual alarms and communication devices provided by the operator of the facility.	702.1 Fire alarm systems-shall have permanently installed audible and visible alarms.	The new standards forbid the use of portable fire alarm units and require hoteliers to install permanent visible fire alarms in guest rooms. This provision should be exempt from the barrier removal requirement.

Table 1 (continued)

Element	Current DOJ Standards	2004 ADAAG	Small Business Comments*
10. Visible Fire Alarm Requirements	9.3.1 General- In sleeping rooms required to comply with this section, auxiliary visual alarms shall be provided and shall comply with 4.28.4. Visual notification devices shall also be provided in units, sleeping rooms and suites to alert room occupants of incoming telephone calls and a door knock or bell. Notification devices shall not be connected to auxiliary visual alarm signal appliances.	224.5 Dispersion- not more than 10 percent of guest rooms required to provide mobility features complying with 806.2 shall be used to satisfy the minimum number of guest rooms required to provide communication features complying with 806.3	The current rules allow hoteliers to retrofit a single room to contain both visible alarms and wheelchair accessibility features. However the new guidelines have now specifically prohibited most of any overlap. Two separate rooms would be required under the new rules — one that meets the mobility standards and one that meets communication requirements. This provision should be exempt from the barrier removal requirement.

* Summary of comments provided to the public docket for the 2004 ADAAG and associated ANPRM (e.g., Langer, 2005 and Sullivan, 2005).

B. Cost Estimation Steps

The following section describes how Pechan developed estimates of the average number of floors by building type and firm size. These estimates were used along with TPJ's per-unit cost estimates for 2004 ADAAG barrier removal activities to calculate separate typical small and large firm building costs. This is followed by a discussion of the steps used to develop estimates of the average square footage and employment by building type and firm size. These estimates were used to develop per-square foot and per-employee cost metrics to evaluate whether barrier removal costs can be expected to fall disproportionately on small entities.

1. Average Number of Floors by Building Type and Firm Size

The first step in estimating the average number of floors by building type and firm size is to adopt an assumed small firm size threshold definition for each building type. This step was accomplished by first identifying the principal economic sectors associated with each building type. The *2003 Commercial Building Energy Consumption Survey (CBECS)* provides a crosswalk between building types and the 3-digit North American Industry Classification System (NAICS) codes that are the most likely principal activities occurring in these buildings (EIA, 2007a). Table 2 displays this crosswalk for the CBECS building types modeled by TPJ.

It is important to note that the requirement to remove barriers in existing buildings applies only to a *private* entity that owns, leases, leases to, or operates a "place of public accommodation." As noted in DOJ's Barrier Removal Technical Assistance guidance document, there is no requirement to remove barriers if the business is only a place of employment that is not open to the general public. Such businesses are called "commercial facilities" under the ADA. Further, DOJ guidance states that a place of public accommodation is a facility whose operations affect commerce and fall within at least one of the following 12 categories set out in the ADA:

- 1) Places of lodging (e.g., inns, hotels, motels) (except for owner-occupied establishments renting fewer than six rooms);
- 2) Establishments serving food or drink (e.g., restaurants and bars);
- 3) Places of exhibition or entertainment (e.g., motion picture houses, theaters, concert halls, stadiums);
- 4) Places of public gathering (e.g., auditoriums, convention centers, lecture halls);

Table 2. CBECS Crosswalk between Primary Economic Sectors and Building Types

NAICS Code	CBECS Building Type				
	Food Service	Inpatient Health Care	Lodging	Retail (non-mall)	Office
441 Motor Vehicles & Parts Dealers				√	
442 Furniture Home Furnishing Stores				√	
443 Electronics & Appliances Stores				√	
444 Building & Garden Eqpt. Supplies				√	
451 Sports, Hobby, Book, Music Stores				√	
452 General Merchandise Stores				√	
453 Other Store Retailers				√	
454 Nonstore Retailers					√
486 Pipeline Transportation					√
511 Publishing Industries					√
516 Internet Publishing and Broadcasting					√
517 Telecommunications					√
518 Internet Service Providers, etc.					√
519 Other Information Services					√
521 Central Bank					√
522 Credit Intermediation, etc.					√
523 Securities, Investments, Contracts					√
524 Insurance Carriers, etc.					√
525 Funds, Trusts, and Other Financial					√
531 Real Estate					√
532 Rental & Leasing Services				√	
533 Lessors of Nonfinancial Intangibles					√
541 Professional, Scientific, Tech Services					√
551 Management of Companies, etc.					√
561 Administrative & Support Services					√
622 Hospitals		√			
623 Nursing & Residential Care Facilities			√		
624 Social Assistance					√
721 Accommodation			√		
722 Food Service and Drinking Places	√				
921 Executive, Legislative, and Other Gov't					√

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- 5) Sales or rental establishments (e.g., bakeries, grocery stores, hardware stores, shopping centers);
 - 6) Service establishments (e.g., laundromats, dry-cleaners, banks, barber shops, beauty shops, travel services, shoe repair services, funeral parlors, gas stations, offices of accountants or lawyers, pharmacies, insurance offices, professional offices of health care providers, hospitals);
 - 7) Public transportation terminals, depots, or stations (not including facilities relating to air transportation);
 - 8) Places of public display or collection (e.g., museums, libraries, galleries);
 - 9) Places of recreation (e.g., parks, zoos, amusement parks);
 - 10) Places of education (e.g., nursery schools, elementary, secondary, undergraduate, or postgraduate private schools);
 - 11) Social service center establishments (e.g., day care centers, senior citizen centers, homeless shelters, food banks, adoption agencies); and
 - 12) Places of exercise or recreation (e.g., gymnasiums, health spas, bowling alleys, golf courses) (DOJ, 1996).

Pechan reviewed the Table 2 NAICS codes at a more detailed level to exclude public sectors (e.g., NAICS code 921-Executive, Legislative, and Other Government) and sectors/subsectors with facilities that are not generally open to the public (e.g., NAICS code 454-Nonstore Retailers; NAICS code 521-Central Bank) so as to exclude data for sectors whose establishments would not be subject to the ADA's barrier removal requirements.

The 2003 CBECS crosswalk notes additional economic sectors associated with each building type beyond the primary sectors noted in Table 2. Pechan reviewed this CBECS information to identify any additional sectors that are generally composed of public accommodation facilities. Table 3 presents the final list of economic sectors associated with public accommodation facilities by modeled building type.

Table 3. Public Accommodation Facility Economic Sectors by Building Type

NAICS Code	Modeled Building Type				
	Hospital	Hotel	Restaurant	Retail	Office
44 through 45 (Retail Trade) except 4451 (Grocery Stores), 4452 (Specialty Food Stores), 447 (Gasoline Stations), 454 (Nonstore Retailers) ¹				√	
5221 Depository Credit Institutions					√
52393 Investment Advice					√
52421 Insurance Agencies & Brokerages					√
5312 Offices of Real Estate Agents & Brokers					√
532 Rental & Leasing Services				√	
5411 Legal Services					√
5412 Accounting, Tax Preparation, Bookkeeping, & Payroll Services					√
54141 Interior Design Services					√
54192 Photographic Services				√	
56131 Employment Placement Agencies					√
56151 Travel Agencies					√
6211 Offices of Physicians					√
6212 Offices of Dentists					√
6213 Offices of Other Health Practitioners					√
622 Hospitals	√				
624 Individual & Family Services					√
7211 Traveler Accommodation		√			
722 Food Services & Drinking Places			√		

¹ CBECS categorizes Gasoline Stations in the Service building category; Grocery/Specialty Food Stores primarily in the Food Sales building category; and Nonstore Retailers in the Office building category (note that Nonstore Retailers are not reported under the Office category because facilities in this sector are considered "Commercial buildings" under the ADA).

Pechan reviewed the Small Business Administration (SBA)'s small business size standards for the Table 3 sectors to identify representative annual revenue small business size thresholds by building type. Pechan selected the following small firm size thresholds based on the predominant size standard for the sectors associated with each building type:

- Restaurant – \$6.5 million;
- Hospital – \$31.5 million;
- Hotel – \$6.5 million;
- Retail – \$6.5 million; and
- Office – \$6.5 million (SBA, 2007).

Next, Pechan compiled establishment and firm size data from the Census Bureau's 2002 *Economic Census* to develop estimates for each building type of the number of employees per establishment for firms with revenues equaling the small firm size revenue thresholds noted above (Census, 2007). Table 4 displays the Census data and calculations performed to estimate these values for the hospital sector. The shaded cells indicate that the \$31.5 million small firm size threshold is associated with somewhere between 367 and 699 employees. Using interpolation based on the estimated sales per firm for these employment estimates, Pechan computed an estimated 406 employees for a firm with revenues of \$31.5 million in the hospital sector. By similarly interpolating between available establishments per firm values, Pechan computed an estimated 1.05 establishments per firm for the hospital sector firms with revenues of \$31.5 million. Pechan then computed an estimated 387 employees per establishment for hospital sector firms with revenues of \$31.5 million by dividing the 1.05 value into the 406 employees per firm estimate. The following identify estimates of each modeled building type's total employment per establishment for the selected SBA small firm threshold:

- Hospital – 387 employees;
- Hotel – 68 employees;
- Restaurant – 38 employees;
- Retail – 17 employees; and
- Office – 18 employees.

Because CBECS reports the number of workers only for the main shift, it was necessary to estimate the percentage of employment by building type that occurs during the main shift. The Bureau of Labor Statistics (BLS) periodically surveys households to collect information about shift work. The most recent BLS survey provides industry and occupation-specific estimates of total employment and percentage of total employment from shift workers (BLS, 2005). For each building type, Table 5 presents the BLS data and calculations used to develop estimates of the percentage of total employment occurring during the main shift (displayed in shaded cells).¹⁴ Because it was necessary to include values from multiple occupations for office buildings, Pechan weighted each of the reported values by computing the number of shift workers associated with each occupation.¹⁵

¹⁴ Note that data are not available to determine whether percentages differ by employment size.

¹⁵ Office buildings were represented by adding office and administrative support occupations estimates to the result of subtracting healthcare practitioner and technical occupations estimates from management, professional, and related occupations estimates.

Table 4. Sample Estimation of Employment per Establishment for Small Firm Size Threshold: Hospitals

Employment Category	2002 Economic Census Data				Calculated from Census Data		
	Firms	Establishments	Receipts/ Revenue (\$000s)	Paid Employees for Period with March 12*	Average Sales Per Firm (\$)	Average Employees Per Firm	Average Establishments Per Firm
NAICS 622 - Hospitals							
Less than 5 employees	8	9	withheld	withheld			
5 to 9 employees	5	5	withheld	withheld			
10 to 19 employees	5	5	11,059	72	2,211,800	14	1.00
20 to 49 employees	88	91	233,338	3,118	2,651,568	35	1.03
50 to 99 employees	343	347	1,746,491	26,280	5,091,810	77	1.01
100 to 249 employees	912	923	10,402,541	153,155	11,406,295	168	1.01
250 to 499 employees	684	714	19,122,958	250,821	27,957,541	367	1.04
500 to 999 employees	615	682	35,404,973	429,988	57,569,062	699	1.11
1,000+ employees	1,140	3,566	432,173,146	4,299,347	379,099,251	3,771	3.13
Total	3,800	6,342	499,384,605	5,162,823	131,417,001	1,359	1.67
<i>Small Firm Threshold</i>					\$31,500,000	406**	1.05**
Employment per establishment for small size threshold:				387			

* Because employment levels can vary over the course of a year, the Census Bureau asks employers to provide employment for their payroll period that included March 12, 2002.

** Interpolated value

Table 5. Total Employment and Shift Worker Employment by Industry/Occupation

Industry/Occupation	Total Workers (1000s)	% Shift Workers	# Shift Workers*
Hospital Building			
Healthcare practitioner and technical occupations	4,626	24.6	
Hotel Building			
Accommodation	1,123	29.4	
Restaurant Building			
Food services and drinking places	3,854	42.8	
Retail Building			
Retail trade	10,237	19.4	
Office Building			
(1) Management, professional, and related occupations	36,200	7.6	2,751
(2) Healthcare practitioner and technical occupations	4,626	24.6	1,138
(3) = (1) – (2)	31,574		1,613
(4) Office and administrative support occupations	14,724	9.9	1,458
Sum of (3) + (4)	46,298	6.6	3,071

* Computed for Office Building by Pechan from CBECS-reported values for total workers and % shift workers.

The shaded values in Table 5 were then used to adjust each building type’s small firm threshold total employment per establishment estimate to yield each building type’s small firm threshold main shift employment per establishment. The data for these calculations and the resulting small firm threshold main shift employment per establishment estimates are displayed in Table 6.

Table 6. Small Firm Main Shift Employment per Establishment Thresholds

Building Type	Total # of Employees/ Establishment	% Shift Workers	% During Main Shift	# of Employees During Main Shift/ Establishment
Hospital	387	24.6	75.4	291
Hotel	68	29.4	70.6	48
Restaurant	38	42.8	57.2	22
Retail	17	19.4	80.6	14
Office	18	6.6	93.4	17

The next step was to compile 2003 CBECS data that match the TPJ modeled building types. Pechan used the following crosswalk to accomplish this step:

TPJ Modeled Building Type	CBECS Principal Building Activities
Hospital	Hospital/inpatient health
Hotel	Lodging
Restaurant	Restaurant/cafeteria and fast food
Retail	Retail other than mall
Office	Office excluding government office

In particular, Pechan compiled the following 2003 CBECS data for each of the principal building activities noted above:

- Unique building identifier;
- Square footage;
- Number of floors;
- Number of employees during main shift;
- Number of businesses; and
- Final full sample building weight (EIA, 2007b)

The final full sample building weights were used to weight each value to reflect the national universe of buildings represented by the representative sampled building. For example, the total square footage of commercial sector buildings can be obtained by summing the product of each record's square footage multiplied by the record's full sample building weight.

To estimate the average number of floors for small and large firm buildings by type of building, Pechan first computed each building's average main shift employment per establishment by dividing the 2003 CBECS reported number of main shift employees by the 2003 CBECS reported number of businesses in the building. Next, Pechan used these values and the small firm main shift employment per establishment thresholds displayed in Table 6 to separate each CBECS record into either a small firm establishment building category or a large firm establishment building category. Finally, Pechan computed the weighted average number of floors for small and large firms using each record's reported number of floors and the associated full sample building weight. Table 7 displays the resulting estimates of number of floors by building type for typical small firm and large firm establishment buildings.

Table 7. Estimated Number of Floors for Average Small and Large Firm Buildings

Building Type	Weighted Average Number of Floors		Large Firm/ Small Firm
	Small Firm Building	Large Firm Building	
Hospital	3.1	7.4	2.4
Hotel	2.3	10.0	4.3
Restaurant	1.4	(see note below)	(see note below)
Retail	1.4	1.4	1.0
Office	1.7	2.8	1.7

Notes: Estimated costs for barrier removal were based on values rounded to the nearest integer. Also, a large firm restaurant building estimate was computed (1.1), but was not used in the cost analysis because TPJ developed per-unit cost information only for a small restaurant.

Table 7 indicates that the average number of floors does not differ significantly for retail buildings housing small versus large firm establishments. Average large firm hotel and hospital buildings, however, have more than double the number of floors of their small firm counterparts. The Table 7 values were combined with TPJ's per-unit cost estimates to calculate the costs of each barrier removal element associated with a given building type/firm size. The barrier removal elements, per-unit costs, and resulting cost estimates are presented in Appendices B through F.

2. Average Square Footage and Employment by Building Type and Firm Size

Pechan used similar methods to those above in computing estimates of the average small and large firm building square footage and the number of main shift employees per establishment for each building type. The main shift employment per establishment estimates were then adjusted to reflect total employment per establishment by applying adjustment factors from Table 6. The per-establishment employment estimates were then converted to a per-building basis by multiplying by the weighted average number of businesses per building computed from the 2003 CBECS:

- Hospital - Small = 3 and Large = 1;
- Hotel - Small = 1 and Large = 1;
- Restaurant - Small = 1 and Large = 1;
- Retail - Small = 2 and Large = 1; and
- Office - Small = 2 and Large = 2.

The estimated typical square footage and employment per building estimates are presented in Tables 8 and 9, respectively.

Table 8. Estimated Square Footage of Average Small and Large Firm Buildings

Building Type	Average Building Square Footage		Large Firm/ Small Firm
	Small Firm	Large Firm	
Hospital	134,902	548,318	4.1
Hotel	25,934	236,454	9.1
Restaurant	5,104	(see note below)	(see note below)
Retail	7,169	35,893	5.0
Office	7,432	49,471	6.7

Notes: Estimated costs per square for barrier removal improvements were based on rounding the square footage estimates to the nearest 1,000 square feet. Also, a large firm restaurant building estimate was computed (8,184), but was not used in the cost analysis because TPJ developed per-unit cost information only for a small restaurant.

Table 9. Estimated Employment of Average Small and Large Firm Buildings

Building Type	Average Building Employment		Large Firm/ Small Firm
	Small Firm	Large Firm	
Hospital	552	1,397	2.5
Hotel	8	214	26.8
Restaurant	13	(see note below)	(see note below)
Retail	10	45	4.5
Office	12	142	11.8

Notes: Although a large firm restaurant building estimate was computed (58), it was not used in the cost analysis because TPJ developed per-unit cost information only for a small restaurant.

C. Results

This section discusses the barrier removal cost estimates developed in this study. The following cost information is provided in this section for each building type/firm size and for both baseline cost and baseline plus cost mark-up assumptions: total costs, total costs per square foot, and total costs per employee.¹⁶ Appendix A displays these total costs disaggregated by type of improvement (i.e., for each of the ten 2004 ADAAG barrier removal requirement elements modeled in this study). Appendices B through F present the following for each building type/firm size and type of improvement: construction barrier removal activities, each construction activity's estimated per-unit cost, the estimated number of units to be renovated, and the activity's total cost.

1. Cost Estimates

Table 10 summarizes the estimated barrier removal costs by building type and firm size, and reports total costs, costs per square foot, and costs per employee. Because DOJ has stated its intention to exempt employee work areas from 2004 ADAAG barrier removal requirements (69 FR 58768, 2004 at page 58772), Table 10 also reports cost estimates both with and without employee work area improvements. As noted in Table 10, the “baseline” costs range from approximately \$55,000 for small restaurant buildings (excluding employee work area barrier removals) to approximately \$498,000 for large hospital buildings (including employee work area barrier removals). The associated “baseline plus mark-up” costs range from \$83,000 for small restaurant buildings to \$756,000 for large hospital buildings.

Measured on both a per-square foot and a per-employee basis, all estimates indicate higher costs for small entities than large entities. Focusing on the cost estimates including employee work area requirements, office buildings experience the largest cost per square foot differential between small and large firms—typical small firm buildings face costs that are more than 4 times higher than typical large firm buildings. On a per-employee basis, office buildings have the second largest cost differential by firm size (typical small firm building costs are approximately 6.9 times higher than typical large firm buildings); hotel buildings have the greatest cost differential, with small firm building costs 7.9 times higher than large firm building costs. Although small firm hospital buildings have some of the highest total barrier removal costs, the small and large firm per-square foot and per-employee cost differential is smallest for this building type (2.4 and 1.5, respectively).

¹⁶ “Baseline” costs directly reflect the RSMeans-based cost estimates, while the “baseline plus mark-up” costs reflect the addition of mark-ups reflecting general conditions, general contractor overhead and profit, and construction contingencies.

Table 10. Barrier Removal Cost Summary by Building Type and Firm Size

Building Type	Firm Size	Baseline			Baseline plus Mark-up		
		Total Cost	Cost per sq ft	Cost per employee	Total Cost	Cost per sq ft	Cost per employee
<i>Including Employee Work Area Improvements</i>							
Hospital	Small	\$275,375	\$2.04	\$499	\$418,019	\$3.10	\$757
	Large	\$497,988	\$0.91	\$356	\$755,945	\$1.38	\$541
Hotel	Small	\$139,666	\$5.37	\$17,458	\$212,013	\$8.15	\$26,502
	Large	\$454,886	\$1.93	\$2,126	\$690,516	\$2.93	\$3,227
Restaurant	Small	\$82,449	\$16.49	\$6,342	\$125,158	\$25.03	\$9,628
Retail	Small	\$84,374	\$12.05	\$8,437	\$128,080	\$18.30	\$12,808
	Large	\$124,856	\$3.47	\$2,775	\$189,532	\$5.26	\$4,212
Office	Small	\$127,782	\$18.25	\$10,648	\$193,973	\$27.71	\$16,164
	Large	\$270,457	\$5.52	\$1,905	\$410,554	\$8.38	\$2,891
<i>Excluding Employee Work Area Improvements</i>							
Hospital	Small	\$127,999	\$0.95	\$232	\$194,303	\$1.44	\$352
	Large	\$212,478	\$0.39	\$152	\$322,542	\$0.59	\$231
Hotel	Small	\$68,409	\$2.63	\$8,551	\$103,845	\$3.99	\$12,981
	Large	\$231,802	\$0.98	\$1,083	\$351,875	\$1.49	\$1,644
Restaurant	Small	\$54,604	\$10.92	\$4,200	\$82,889	\$16.58	\$6,376
Retail	Small	\$54,930	\$7.85	\$5,493	\$83,384	\$11.91	\$8,338
	Large	\$92,712	\$2.58	\$2,060	\$140,736	\$3.91	\$3,127
Office	Small	\$74,913	\$10.70	\$6,243	\$113,718	\$16.25	\$9,476
	Large	\$128,347	\$2.62	\$904	\$194,830	\$3.98	\$1,372

Appendix A displays additional cost detail by type of barrier removal improvement, and Appendices B through F present the following information for each building type/firm size and type of improvement: modeled barrier removal activities, the activities' estimated per-unit cost, the estimated number of units to be renovated, and the activities' total cost.

Appendix A indicates that for all building types except large retail, the 2004 ADAAG's employee work area requirements are associated with the highest proportion of total barrier removal costs. For the most part, these requirements account for slightly more than half of total costs for the ten architectural barrier removal elements included in this study.¹⁷ The barrier removal requirements for public entrances generally account for the second highest costs—typically representing somewhat less than 20 percent of total estimated costs.¹⁸

¹⁷ Exceptions are small restaurants and small retail buildings (approximately 35 percent of total costs) and large retail buildings (26 percent).

¹⁸ Exceptions are large retail buildings (40 percent of total costs) and small restaurants and small retail buildings (approximately 30 percent).

2. Summary

This study examined the compliance costs of 2004 ADAAG barrier removal requirements for existing structures. Because the requirements differ somewhat by the use of the structure, and therefore by the nature of the business using the structure, we evaluated a sample of different structure types, driven by typical types owned/leased by small entities. The results indicate that both small and large firms will incur substantial barrier removal costs if DOJ adopts the 2004 ADAAG. With the exception of hospitals, this study indicates that small firms are expected to face considerably higher costs than large firms when costs are expressed on either a per-square foot or per-employee basis.¹⁹ Small firms in both the office and hotel sectors are estimated to experience costs per employee that are more than 5 times those experienced by large firms. This study's bottom-up cost estimates indicate that the 2004 ADAAG barrier removal requirements for employee work area and public entrances are expected to be most costly, and as such, represent particular areas for DOJ emphasis in crafting exemptions/revisions in forthcoming regulations implementing the ADA.

It should be noted that there are two sets of tax credits/deductions to assist existing facilities in paying for barrier removal renovations. Internal Revenue Service (IRS) Code Section 44 allows a tax credit for small businesses that have total revenues of \$1 million or less in the previous tax year or 30 or fewer full-time employees. This credit can cover 50 percent of eligible access expenditures in a year up to \$10,250 (i.e., a maximum credit of \$5,000). The IRS Code Section 190 tax deduction is available to all businesses, and provides a maximum deduction of \$15,000 per year. Small businesses can use these incentives in combination, and each can be used annually. Although these credits/deductions can assist small firms, the magnitude of the costs associated with the barrier removal requirements of the 2004 ADAAG suggests that DOJ should consider reducing the scope of these requirements.

¹⁹ Note that because the study did not model a large firm restaurant building, it is not possible to conclude whether small firms in the restaurant sector will experience disproportionate renovation costs relative to large firms.

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Appendix A. Barrier Removal Cost Summary by Type of Improvement

Building Type	Square Footage	# Employees	Improvement Type	Baseline			Baseline plus Mark-up		
				Total Cost	Cost per sq ft	Cost per employee	Total Cost	Cost per sq ft	Cost per employee
Small Hospital	135,000	552	#1 Employee Work Areas	\$147,376	\$1.09	\$267	\$223,716	\$1.66	\$405
			#2 Public Entrances	\$51,820	\$0.38	\$94	\$78,663	\$0.58	\$143
			#3 Reach Ranges	\$29,272	\$0.22	\$53	\$44,435	\$0.33	\$80
			#4 Walking Surfaces	\$12,584	\$0.09	\$23	\$19,103	\$0.14	\$35
			#5 Water Closets and Toilet Compartments	\$27,285	\$0.20	\$49	\$41,419	\$0.31	\$75
			#6 Knee and Toe Clearance	\$7,038	\$0.05	\$13	\$10,684	\$0.08	\$19
			Total Excluding #1	\$127,999	\$0.95	\$232	\$194,303	\$1.44	\$352
			Total Including #1	\$275,375	\$2.04	\$499	\$418,019	\$3.10	\$757
Large Hospital	548,000	1,397	#1 Employee Work Areas	\$285,510	\$0.52	\$204	\$433,403	\$0.79	\$310
			#2 Public Entrances	\$51,820	\$0.09	\$37	\$78,663	\$0.14	\$56
			#3 Reach Ranges	\$67,987	\$0.12	\$49	\$103,204	\$0.19	\$74
			#4 Walking Surfaces	\$12,584	\$0.02	\$9	\$19,103	\$0.03	\$14
			#5 Water Closets and Toilet Compartments	\$63,665	\$0.12	\$46	\$96,643	\$0.18	\$69
			#6 Knee and Toe Clearance	\$16,422	\$0.03	\$12	\$24,929	\$0.05	\$18
			Total Excluding #1	\$212,478	\$0.39	\$152	\$322,542	\$0.59	\$231
			Total Including #1	\$497,988	\$0.91	\$356	\$755,945	\$1.38	\$541
Small Hotel	26,000	8	#1 Employee Work Areas	\$71,257	\$2.74	\$8,907	\$108,168	\$4.16	\$13,521
			#2 Public Entrances	\$25,910	\$1.00	\$3,239	\$39,331	\$1.51	\$4,916
			#3 Reach Ranges	\$16,911	\$0.65	\$2,114	\$25,671	\$0.99	\$3,209
			#4 Walking Surfaces	\$6,292	\$0.24	\$787	\$9,551	\$0.37	\$1,194
			#5 Water Closets and Toilet Compartments	\$9,095	\$0.35	\$1,137	\$13,806	\$0.53	\$1,726
			#6 Knee and Toe Clearance	\$2,703	\$0.10	\$338	\$4,103	\$0.16	\$513
			#8 Restaurant and Bar Requirements	\$6,534	\$0.25	\$817	\$9,919	\$0.38	\$1,240
			#9 Portable Fire Alarms	\$482	\$0.02	\$60	\$732	\$0.03	\$91
			#10 Visible Fire Alarm Requirements	\$482	\$0.02	\$60	\$732	\$0.03	\$91
			Total Excluding #1	\$68,409	\$2.63	\$8,551	\$103,845	\$3.99	\$12,981
			Total Including #1	\$139,666	\$5.37	\$17,458	\$212,013	\$8.15	\$26,502

Appendix A (continued)

Building Type	Square Footage	# Employees	Improvement Type	Baseline			Baseline plus Mark-up		
				Total Cost	Cost per sq ft	Cost per employee	Total Cost	Cost per sq ft	Cost per employee
Large Hotel	236,000	214	#1 Employee Work Areas	\$223,084	\$0.95	\$1,042	\$338,641	\$1.43	\$1,582
			#2 Public Entrances	\$77,730	\$0.33	\$363	\$117,994	\$0.50	\$551
			#3 Reach Ranges	\$74,036	\$0.31	\$346	\$112,386	\$0.48	\$525
			#4 Walking Surfaces	\$18,876	\$0.08	\$88	\$28,654	\$0.12	\$134
			#5 Water Closets and Toilet Compartments	\$36,380	\$0.15	\$170	\$55,225	\$0.23	\$258
			#6 Knee and Toe Clearance	\$9,911	\$0.04	\$46	\$15,045	\$0.06	\$70
			#8 Restaurant and Bar Requirements	\$10,049	\$0.04	\$47	\$15,254	\$0.06	\$71
			#9 Portable Fire Alarms	\$2,410	\$0.01	\$11	\$3,658	\$0.02	\$17
			#10 Visible Fire Alarm Requirements	\$2,410	\$0.01	\$11	\$3,658	\$0.02	\$17
			Total Excluding #1	\$231,802	\$0.98	\$1,083	\$351,875	\$1.49	\$1,644
			Total Including #1	\$454,886	\$1.93	\$2,126	\$690,516	\$2.93	\$3,227
Small Restaurant	5,000	13	#1 Employee Work Areas	\$27,845	\$5.57	\$2,142	\$42,269	\$8.45	\$3,251
			#2 Public Entrances	\$25,445	\$5.09	\$1,957	\$38,625	\$7.73	\$2,971
			#3 Reach Ranges	\$6,337	\$1.27	\$487	\$9,620	\$1.92	\$740
			#4 Walking Surfaces	\$6,292	\$1.26	\$484	\$9,551	\$1.91	\$735
			#5 Water Closets and Toilet Compartments	\$9,095	\$1.82	\$700	\$13,806	\$2.76	\$1,062
			#6 Knee and Toe Clearance	\$901	\$0.18	\$69	\$1,368	\$0.27	\$105
			#8 Restaurant and Bar Requirements	\$6,534	\$1.31	\$503	\$9,919	\$1.98	\$763
			Total Excluding #1	\$54,604	\$10.92	\$4,200	\$82,889	\$16.58	\$6,376
			Total Including #1	\$82,449	\$16.49	\$6,342	\$125,158	\$25.03	\$9,628
Small Retail	7,000	10	#1 Employee Work Areas	\$29,445	\$4.21	\$2,944	\$44,697	\$6.39	\$4,470
			#2 Public Entrances	\$25,445	\$3.63	\$2,544	\$38,625	\$5.52	\$3,863
			#3 Reach Ranges	\$8,597	\$1.23	\$860	\$13,051	\$1.86	\$1,305
			#4 Walking Surfaces	\$6,292	\$0.90	\$629	\$9,551	\$1.36	\$955
			#5 Water Closets and Toilet Compartments	\$9,095	\$1.30	\$910	\$13,806	\$1.97	\$1,381
			#6 Knee and Toe Clearance	\$901	\$0.13	\$90	\$1,368	\$0.20	\$137
			#7 Changing Rooms	\$4,600	\$0.66	\$460	\$6,983	\$1.00	\$698
			Total Excluding #1	\$54,930	\$7.85	\$5,493	\$83,384	\$11.91	\$8,338
			Total Including #1	\$84,374	\$12.05	\$8,437	\$128,080	\$18.30	\$12,808

Appendix A (continued)

Building Type	Square Footage	# Employees	Improvement Type	Baseline			Baseline plus Mark-up		
				Total Cost	Cost per sq ft	Cost per employee	Total Cost	Cost per sq ft	Cost per employee
Large Retail	36,000	45	#1 Employee Work Areas	\$32,145	\$0.89	\$714	\$48,795	\$1.36	\$1,084
			#2 Public Entrances	\$50,889	\$1.41	\$1,131	\$77,250	\$2.15	\$1,717
			#3 Reach Ranges	\$8,597	\$0.24	\$191	\$13,051	\$0.36	\$290
			#4 Walking Surfaces	\$12,584	\$0.35	\$280	\$19,103	\$0.53	\$425
			#5 Water Closets and Toilet Compartments	\$9,095	\$0.25	\$202	\$13,806	\$0.38	\$307
			#6 Knee and Toe Clearance	\$2,346	\$0.07	\$52	\$3,561	\$0.10	\$79
			#7 Changing Rooms	\$9,200	\$0.26	\$204	\$13,966	\$0.39	\$310
			Total Excluding #1	\$92,712	\$2.58	\$2,060	\$140,736	\$3.91	\$3,127
			Total Including #1	\$124,856	\$3.47	\$2,775	\$189,532	\$5.26	\$4,212
Small Office	7,000	12	#1 Employee Work Areas	\$52,869	\$7.55	\$4,406	\$80,255	\$11.47	\$6,688
			#2 Public Entrances	\$25,910	\$3.70	\$2,159	\$39,331	\$5.62	\$3,278
			#3 Reach Ranges	\$19,829	\$2.83	\$1,652	\$30,100	\$4.30	\$2,508
			#4 Walking Surfaces	\$6,292	\$0.90	\$542	\$9,551	\$1.36	\$796
			#5 Water Closets and Toilet Compartments	\$18,190	\$2.60	\$1,516	\$27,612	\$3.94	\$2,301
			#6 Knee and Toe Clearance	\$4,692	\$0.67	\$391	\$7,122	\$1.02	\$594
			Total Excluding #1	\$74,913	\$10.70	\$6,243	\$113,718	\$16.25	\$9,476
Total Including #1	\$127,782	\$18.25	\$10,648	\$193,973	\$27.71	\$16,164			
Large Office	49,000	142	#1 Employee Work Areas	\$142,111	\$2.90	\$1,001	\$215,724	\$4.40	\$1,519
			#2 Public Entrances	\$51,820	\$1.06	\$365	\$78,663	\$1.61	\$554
			#3 Reach Ranges	\$29,620	\$0.60	\$209	\$44,962	\$0.92	\$317
			#4 Walking Surfaces	\$12,584	\$0.26	\$89	\$19,103	\$0.39	\$135
			#5 Water Closets and Toilet Compartments	\$27,285	\$0.56	\$192	\$41,419	\$0.85	\$292
			#6 Knee and Toe Clearance	\$7,038	\$0.14	\$50	\$10,684	\$0.22	\$75
			Total Excluding #1	\$128,347	\$2.62	\$904	\$194,830	\$3.98	\$1,372
Total Including #1	\$270,457	\$5.52	\$1,905	\$410,554	\$8.38	\$2,891			

Appendix B. Comparison of Small Hospital vs. Large Hospital Barrier Removal Costs

Small Hospital- 3 Story, 135,000 square feet						Large Hospital - 7 story, 548,000 square feet							
<i>Improvement #1 Employee Work Areas</i>													
C15001001100	6	Remove apron below plastic laminate counter	Ea.	\$89.50	\$537.00	One per floor in employee only restrooms, male and female	C15001001100	14	Remove apron below plastic laminate counter	Ea.	\$89.50	\$1,253.00	One per floor in employee only restrooms, male and female
C15001001400	6	Lower 36" wide section of counter	Ea.	\$331.50	\$1,989.00	One per floor in employee only restrooms, male and female	C15001001400	14	Lower 36" wide section of counter	Ea.	\$331.50	\$4,641.00	One per floor in employee only restrooms, male and female
C15001002600	3	Modify kitchens	Ea.	\$1,445.00	\$4,335.00	One per floor	C15001002600	7	Modify kitchens	Ea.	\$1,445.00	\$10,115.00	One per floor
C15001002700	3	Install accessible wood shelf and pole	Ea.	\$198.00	\$594.00	One per floor	C15001002700	7	Install accessible wood shelf and pole	Ea.	\$198.00	\$1,386.00	One per floor
C15001002900	3	Lower 2 coat hooks	Ea.	\$114.00	\$342.00	One pair per floor	C15001002900	7	Lower 2 coat hooks	Ea.	\$114.00	\$798.00	One pair per floor
C20001003100	9	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$10,170.00	Three per floor	C20001003100	21	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$23,730.00	Three per floor
C20001003400	6	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$10,530.00	One pair per floor	C20001003400	14	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$24,570.00	One pair per floor
C20001004000	15	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$3,232.50	For each door replacement	C20001004000	35	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$7,542.50	For each door replacement
C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entry	C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entry
C20002001100	96	Install wing walls	S.F.	\$5.79	\$555.84	One set of wing walls per floor	C20002001100	224	Install wing walls	S.F.	\$5.79	\$1,296.96	One set of wing walls per floor
C30001001500	96	Fill in open stair riser (metal pan stairs)	Ea.	\$60.50	\$5,808.00	Two flights per floor. Sixteen risers per flight	C30001001500	224	Fill in open stair riser (metal pan stairs)	Ea.	\$60.50	\$13,552.00	Two flights per floor. Sixteen risers per flight
C30001001800	96	Bevel stair nosing (metal pan)	Ea.	\$60.50	\$5,808.00	Two flights per floor. Sixteen risers per flight	C30001001800	224	Bevel stair nosing (metal pan)	Ea.	\$60.50	\$13,552.00	Two flights per floor. Sixteen risers per flight
C30001002600	6	Add 12" extension to existing wall-mounted pipe railing	Ea.	\$122.00	\$732.00	One per flight, two flights per floor	C30001002600	14	Add 12" extension to existing wall-mounted pipe railing	Ea.	\$122.00	\$1,708.00	One per flight, two flights per floor
C30001002700	6	Add 12" extension to existing freestanding pipe railing	Ea.	\$236.50	\$1,419.00	One per flight, two flights per floor	C30001002700	14	Add 12" extension to existing freestanding pipe railing	Ea.	\$236.50	\$3,311.00	One per flight, two flights per floor
C30001003200	2	Install barrier under stairs	Ea.	\$15,300.00	\$30,600.00	One barrier per stair tower	C30001003200	2	Install barrier under stairs	Ea.	\$15,300.00	\$30,600.00	One barrier per stair tower
D20001001200	1	Install interior unenclosed lift	Ea.	\$7,775.00	\$7,775.00	One area not reached by elevator	D20001001200	1	Install interior unenclosed lift	Ea.	\$7,775.00	\$7,775.00	One area not reached by elevator
D25001001200	3	Lower existing fountain	Ea.	\$713.00	\$2,139.00	One per floor	D25001001200	7	Lower existing fountain	Ea.	\$713.00	\$4,991.00	One per floor

Appendix B (continued)

Small Hospital- 3 Story, 135,000 square feet						Large Hospital - 7 story, 548,000 square feet							
D25001001700	6	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$6,984.00	One per floor in employee only restrooms, male and female	D25001001700	14	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$16,296.00	One per floor in employee only restrooms, male and female
D25001001800	6	Replace toilet in an existing location	Ea.	\$870.00	\$5,220.00	One per floor in employee only restrooms, male and female	D25001001800	14	Replace toilet in an existing location	Ea.	\$870.00	\$12,180.00	One per floor in employee only restrooms, male and female
D25001002100	3	Lower urinal	Ea.	\$845.00	\$2,535.00	One per floor	D25001002100	7	Lower urinal	Ea.	\$845.00	\$5,915.00	One per floor
D25001002400	6	Lower existing sink	Ea.	\$1,180.00	\$7,080.00	One per floor in employee only restrooms, male and female	D25001002400	14	Lower existing sink	Ea.	\$1,180.00	\$16,520.00	One per floor in employee only restrooms, male and female
D25001002500	6	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$1,890.00	One per floor in employee only restrooms, male and female	D25001002500	14	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$4,410.00	One per floor in employee only restrooms, male and female
D25001002600	6	Wrap pipe with insulation	Ea.	\$32.50	\$195.00	One per floor in employee only restrooms, male and female	D25001002600	14	Wrap pipe with insulation	Ea.	\$32.50	\$455.00	One per floor in employee only restrooms, male and female
D25001002800	12	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$2,760.00	Two per floor in employee only restrooms, male and female	D25001002800	28	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$6,440.00	Two per floor in employee only restrooms, male and female
D25001002900	6	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$1,622.16	One per floor in employee only restrooms, male and female	D25001002900	14	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$3,785.04	One per floor in employee only restrooms, male and female
D60001001600	3	Add signage to phone	Ea.	\$177.00	\$531.00	One per floor	D60001001600	7	Add signage to phone	Ea.	\$177.00	\$1,239.00	One per floor
D60001001700	3	Provide new accessible telephone	Ea.	\$149.00	\$447.00	One per floor	D60001001700	7	Provide new accessible telephone	Ea.	\$149.00	\$1,043.00	One per floor
D60001001900	3	Install public text telephone	Ea.	\$1,510.00	\$4,530.00	One per floor	D60001001900	7	Install public text telephone	Ea.	\$1,510.00	\$10,570.00	One per floor
D60001002100	3	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor	D60001002100	7	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$5,600.00	One set of five per floor
D60001002200	3	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor	D60001002200	7	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$5,600.00	One set of five per floor
D60001002300	3	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$2,631.00	One set of five per floor	D60001002300	7	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$6,139.00	One set of five per floor
D60001002400	3	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$2,703.00	One set of five per floor	D60001002400	7	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$6,307.00	One set of five per floor
D60001002700	3	Install new audible/visual alarm	Ea.	\$241.00	\$723.00	One per floor	D60001002700	7	Install new audible/visual alarm	Ea.	\$241.00	\$1,687.00	One per floor
D60001003200	6	Install emergency communications device	Ea.	\$1,793.00	\$10,758.00	One per floor outside employee only restrooms, male and female	D60001003200	14	Install emergency communications device	Ea.	\$1,793.00	\$25,102.00	One per floor outside employee only restrooms, male and female

Appendix B (continued)

Small Hospital- 3 Story, 135,000 square feet						Large Hospital - 7 story, 548,000 square feet							
<i>Improvement #2 Public Entrances</i>													
C20001001700	2	Install new storefront door	Ea.	\$3,500.00	\$7,000.00	Front and rear entrys	C20001001700	2	Install new storefront door	Ea.	\$3,500.00	\$7,000.00	Front and rear entrys
C20001002100	2	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$11,650.00	Front and rear entrys	C20001002100	2	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$11,650.00	Front and rear entrys
C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entrys	C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entrys
C35001001000	400	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$3,860.00	10 x 20 vestibule area, front and rear entrys	C35001001000	400	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$3,860.00	10 x 20 vestibule area, front and rear entrys
C35001001300	324	Install absorbent mat	S.F.	\$18.81	\$6,094.44	9 x 18 mat, front and rear entrys	C35001001300	324	Install absorbent mat	S.F.	\$18.81	\$6,094.44	9 x 18 mat, front and rear entrys
D45001001000	2	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$237.00	Front and rear entrys	D45001001000	2	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$237.00	Front and rear entrys
D60001001100	2	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$930.70	Front and rear entrys	D60001001100	2	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$930.70	Front and rear entrys
G20209001200	4	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$5,000.00	Two spaces at both front and rear entrys	G20209001200	4	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$5,000.00	Two spaces at both front and rear entrys
G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	200 foot path, add one foot to width at front and rear entrys	G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	200 foot path, add one foot to width at front and rear entrys
G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section	G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section
G20409509000	4	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$384.00	1 every 100 feet at both front and rear entrys	G20409509000	4	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$384.00	1 every 100 feet at both front and rear entrys
<i>Improvement #3 Reach Ranges</i>													
C15001001800	3	Lower wall-mounted information rack	Ea.	\$270.51	\$811.53	One per floor	C15001001800	7	Lower wall-mounted information rack	Ea.	\$270.51	\$1,893.57	One per floor
C15001002700	3	Install accessible wood shelf and pole	Ea.	\$198.00	\$594.00	One per floor	C15001002700	7	Install accessible wood shelf and pole	Ea.	\$198.00	\$1,386.00	One per floor
C15001002900	3	Lower 2 coat hooks	Ea.	\$114.00	\$342.00	One set per floor	C15001002900	7	Lower 2 coat hooks	Ea.	\$114.00	\$798.00	One set per floor
D20001002200	1	Lower existing elevator panel	Ea.	\$595.00	\$595.00	One per elevator	D20001002200	2	Lower existing elevator panel	Ea.	\$595.00	\$1,190.00	One per elevator
D20001003100	3	Lower hallway call buttons	Ea.	\$380.50	\$1,141.50	One per floor	D20001003100	7	Lower hallway call buttons	Ea.	\$380.50	\$2,663.50	One per floor
D25001001100	3	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$6,780.00	One per floor	D25001001100	7	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$15,820.00	One per floor

Appendix B (continued)

Small Hospital- 3 Story, 135,000 square feet							Large Hospital - 7 story, 548,000 square feet						
D25001002900	6	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$1,622.16	One per floor in employee only restrooms, male and female	D25001002900	14	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$3,785.04	One per floor in employee only restrooms, male and female
D60001001000	1	Lower existing buzzer/intercom panel in 8" block wall (painted)	Ea.	\$347.65	\$347.65	One per building	D60001001000	2	Lower existing buzzer/intercom panel in 8" block wall (painted)	Ea.	\$347.65	\$695.30	One per building
D60001001100	3	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$1,396.05	One per floor	D60001001100	7	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$3,257.45	One per floor
D60001001600	3	Add signage to phone	Ea.	\$177.00	\$531.00	One per floor	D60001001600	7	Add signage to phone	Ea.	\$177.00	\$1,239.00	One per floor
D60001001700	3	Provide new accessible telephone	Ea.	\$149.00	\$447.00	One per floor	D60001001700	7	Provide new accessible telephone	Ea.	\$149.00	\$1,043.00	One per floor
D60001001900	3	Install public text telephone	Ea.	\$1,510.00	\$4,530.00	One per floor	D60001001900	7	Install public text telephone	Ea.	\$1,510.00	\$10,570.00	One per floor
D60001002100	3	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor	D60001002100	7	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$5,600.00	One set of five per floor
D60001002200	3	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor	D60001002200	7	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$5,600.00	One set of five per floor
D60001002300	3	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$2,631.00	One set of five per floor	D60001002300	7	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$6,139.00	One set of five per floor
D60001002400	3	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$2,703.00	One set of five per floor	D60001002400	7	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$6,307.00	One set of five per floor
Improvement #4 Walking Surfaces													
G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section	G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section
G20301109930	2	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$1,320.00	Front and rear entries	G20301109930	2	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$1,320.00	Front and rear entries
G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	200 foot path, add one foot to width at front and rear entries	G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	200 foot path, add one foot to width at front and rear entries
Improvement #5 Water Closets and Toilet Compartments													
C20001003100	6	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$6,780.00	One per floor in restrooms, male and female.	C20001003100	14	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$15,820.00	One per floor in restrooms, male and female.
D25001001500	6	Install accessible stall	Ea.	\$2,400.00	\$14,400.00	One per floor in restrooms, male and female.	D25001001500	14	Install accessible stall	Ea.	\$2,400.00	\$33,600.00	One per floor in restrooms, male and female.
D25001001600	6	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$885.00	One per floor in restrooms, male and female.	D25001001600	14	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$2,065.00	One per floor in restrooms, male and female.

Appendix B (continued)

Small Hospital- 3 Story, 135,000 square feet						Large Hospital - 7 story, 548,000 square feet							
D25001001800	6	Replace toilet in an existing location	Ea.	\$870.00	\$5,220.00	One per floor in restrooms, male and female.	D25001001800	14	Replace toilet in an existing location	Ea.	\$870.00	\$12,180.00	One per floor in restrooms, male and female.
<i>Improvement # 6 Knee and Toe Clearance</i>													
C15001001000	3	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$1,440.00	One per floor	C15001001000	7	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$3,360.00	One per floor
C15001001100	3	Remove apron below plastic laminate counter	Ea.	\$89.50	\$268.50	One per floor	C15001001100	7	Remove apron below plastic laminate counter	Ea.	\$89.50	\$626.50	One per floor
C15001001400	3	Lower 36" wide section of counter	Ea.	\$331.50	\$994.50	One per floor	C15001001400	7	Lower 36" wide section of counter	Ea.	\$331.50	\$2,320.50	One per floor
C15001002600	3	Modify kitchens	Ea.	\$1,445.00	\$4,335.00	One per floor	C15001002600	7	Modify kitchens	Ea.	\$1,445.00	\$10,115.00	One per floor

Appendix C. Comparison of Small Hotel vs. Large Hotel Barrier Removal Costs

Small Hotel- 2 Story, 26,000 square feet						Large Hotel - 10 story, 236,000 square feet							
<i>Improvement #1 Employee Work Areas</i>													
C15001001100	4	Remove apron below plastic laminate counter	Ea.	\$89.50	\$358.00	One per floor in employee only restrooms, male and female	C15001001100	20	Remove apron below plastic laminate counter	Ea.	\$89.50	\$1,790.00	One per floor in employee only restrooms, male and female
C15001001400	4	Lower 36" wide section of counter	Ea.	\$331.50	\$1,326.00	One per floor in employee only restrooms, male and female	C15001001400	20	Lower 36" wide section of counter	Ea.	\$331.50	\$6,630.00	One per floor in employee only restrooms, male and female
C15001002700	2	Install accessible wood shelf and pole	Ea.	\$198.00	\$396.00	One per floor	C15001002700	10	Install accessible wood shelf and pole	Ea.	\$198.00	\$1,980.00	One per floor
C15001002900	2	Lower 2 coat hooks	Ea.	\$114.00	\$228.00	One pair per floor	C15001002900	10	Lower 2 coat hooks	Ea.	\$114.00	\$1,140.00	One pair per floor
C20001003100	2	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$2,260.00	One per floor	C20001003100	10	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$11,300.00	One per floor
C20001003400	2	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$3,510.00	One pair per floor	C20001003400	10	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$17,550.00	One pair per floor
C20001004000	6	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$1,293.00	For each door replacement	C20001004000	30	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$6,465.00	For each door replacement
C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building	C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building
C30001001500	64	Fill in open stair riser (metal pan stairs)	Ea.	\$60.50	\$3,872.00	Two flights per floor. Sixteen risers per flight	C30001001500	320	Fill in open stair riser (metal pan stairs)	Ea.	\$60.50	\$19,360.00	Two flights per floor. Sixteen risers per flight
C30001001800	64	Bevel stair nosing (metal pan)	Ea.	\$60.50	\$3,872.00	Two flights per floor. Sixteen risers per flight	C30001001800	320	Bevel stair nosing (metal pan)	Ea.	\$60.50	\$19,360.00	Two flights per floor. Sixteen risers per flight
C30001002600	4	Add 12" extension to existing wall-mounted pipe railing	Ea.	\$122.00	\$488.00	One per flight, two flights per floor	C30001002600	20	Add 12" extension to existing wall-mounted pipe railing	Ea.	\$122.00	\$2,440.00	One per flight, two flights per floor
C30001002700	4	Add 12" extension to existing freestanding pipe railing	Ea.	\$236.50	\$946.00	One per flight, two flights per floor	C30001002700	20	Add 12" extension to existing freestanding pipe railing	Ea.	\$236.50	\$4,730.00	One per flight, two flights per floor
C30001003200	2	Install barrier under stairs	Ea.	\$15,300.00	\$30,600.00	One barrier per stair tower	C30001003200	2	Install barrier under stairs	Ea.	\$15,300.00	\$30,600.00	One barrier per stair tower
D25001001700	2	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$2,328.00	One per floor in employee only restroom.	D25001001700	10	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$11,640.00	One per floor in employee only restroom.
D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per floor in employee only restroom.	D25001001800	10	Replace toilet in an existing location	Ea.	\$870.00	\$8,700.00	One per floor in employee only restroom.

Appendix C (continued)

Small Hotel- 2 Story, 26,000 square feet						Large Hotel - 10 story, 236,000 square feet							
D25001002400	2	Lower existing sink	Ea.	\$1,180.00	\$2,360.00	One per floor in employee only restroom.	D25001002400	10	Lower existing sink	Ea.	\$1,180.00	\$11,800.00	One per floor in employee only restroom.
D25001002500	2	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$630.00	One per floor in employee only restroom.	D25001002500	10	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$3,150.00	One per floor in employee only restroom.
D25001002600	2	Wrap pipe with insulation	Ea.	\$32.50	\$65.00	One per floor in employee only restroom.	D25001002600	10	Wrap pipe with insulation	Ea.	\$32.50	\$325.00	One per floor in employee only restroom.
D25001002800	4	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$920.00	Two per floor in employee only restroom	D25001002800	20	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$4,600.00	Two per floor in employee only restroom
D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor in employee only restrooms, male and female	D25001002900	10	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$2,703.60	One per floor in employee only restrooms, male and female
D60001002100	2	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002100	10	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$8,000.00	One set of five per floor
D60001002200	2	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002200	10	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$8,000.00	One set of five per floor
D60001002300	2	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$1,754.00	One set of five per floor	D60001002300	10	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$8,770.00	One set of five per floor
D60001002400	2	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$1,802.00	One set of five per floor	D60001002400	10	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$9,010.00	One set of five per floor
D60001002700	2	Install new audible/visual alarm	Ea.	\$241.00	\$482.00	One per floor	D60001002700	10	Install new audible/visual alarm	Ea.	\$241.00	\$2,410.00	One per floor
D60001003200	2	Install emergency communications device	Ea.	\$1,793.00	\$3,586.00	One per floor outside employee only restrooms, male and female	D60001003200	10	Install emergency communications device	Ea.	\$1,793.00	\$17,930.00	One per floor outside employee only restrooms, male and female
Improvement #2 Public Entrances													
C20001001700	1	Install new storefront door	Ea.	\$3,500.00	\$3,500.00	One per building	C20001001700	3	Install new storefront door	Ea.	\$3,500.00	\$10,500.00	One on each side of hotel. Front entry is assumed to be accessible.
C20001002100	1	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$5,825.00	One per building	C20001002100	3	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$17,475.00	One on each side of hotel. Front entry is assumed to be accessible.
C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building	C20001005400	3	Extend vestibule inside building	Ea.	\$2,700.00	\$8,100.00	One on each side of hotel. Front entry is assumed to be accessible.

Appendix C (continued)

Small Hotel- 2 Story, 26,000 square feet						Large Hotel - 10 story, 236,000 square feet							
C35001001000	200	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$1,930.00	10 x 20 vestibule area	C35001001000	600	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$5,790.00	10 x 20 vestibule area, three entries
C35001001300	162	Install absorbent mat	S.F.	\$18.81	\$3,047.22	9 x 18 mat	C35001001300	486	Install absorbent mat	S.F.	\$18.81	\$9,141.66	9 x 18 mat at the three entries
D45001001000	1	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$118.50	One per building	D45001001000	3	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$355.50	At the three entries
D60001001100	1	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$465.35	One per building	D60001001100	3	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$1,396.05	At the three entries
G20209001200	2	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$2,500.00	Two per building	G20209001200	6	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$7,500.00	Two per entry
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width	G20301109010	600	Widen existing asphalt pathway	S.F.	\$3.46	\$2,076.00	200 foot path, add one foot to width, three entries
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section	G20301109030	12	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$14,820.00	Twelve sections of ramp at 12 feet per section
G20409509000	2	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$192.00	1 every 100 feet	G20409509000	6	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$576.00	1 every 100 feet
Improvement #3 Reach Ranges													
C15001002700	2	Install accessible wood shelf and pole	Ea.	\$198.00	\$396.00	One per floor	C15001002700	10	Install accessible wood shelf and pole	Ea.	\$198.00	\$1,980.00	One per floor
C15001002900	2	Lower 2 coat hooks	Ea.	\$114.00	\$228.00	One set per floor	C15001002900	10	Lower 2 coat hooks	Ea.	\$114.00	\$1,140.00	One set per floor
D20001002200	1	Lower existing elevator panel	Ea.	\$595.00	\$595.00	One per elevator	D20001002200	2	Lower existing elevator panel	Ea.	\$595.00	\$1,190.00	One per elevator
D20001003100	2	Lower hallway call buttons	Ea.	\$380.50	\$761.00	One per floor	D20001003100	10	Lower hallway call buttons	Ea.	\$380.50	\$3,805.00	One per elevator per floor
D25001001100	2	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$4,520.00	One per floor	D25001001100	10	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$22,600.00	One per floor
D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor	D25001002900	10	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$2,703.60	One per floor
D60001001000	1	Lower existing buzzer/intercom panel in 8" block wall (painted)	Ea.	\$347.65	\$347.65	One per building	D60001001000	1	Lower existing buzzer/intercom panel in 8" block wall (painted)	Ea.	\$347.65	\$347.65	One per building
D60001001100	2	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$930.70	One per floor	D60001001100	10	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$4,653.50	One per floor
D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per building	D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per building

Appendix C (continued)

Small Hotel- 2 Story, 26,000 square feet						Large Hotel - 10 story, 236,000 square feet							
D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per building	D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per building
D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per building	D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per building
D60001002100	2	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002100	10	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$8,000.00	One set of five per floor
D60001002200	2	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002200	10	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$8,000.00	One set of five per floor
D60001002300	2	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$1,754.00	One set of five per floor	D60001002300	10	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$8,770.00	One set of five per floor
D60001002400	2	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$1,802.00	One set of five per floor	D60001002400	10	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$9,010.00	One set of five per floor
Improvement #4 Walking Surfaces													
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section	G20301109030	12	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	L.F.	\$1,235.00	\$14,820.00	Twelve sections of ramp at 12 feet per section
G20301109930	1	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$660.00	One per building	G20301109930	3	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$1,980.00	One per entry
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width	G20301109010	600	Widen existing asphalt pathway	S.F.	\$3.46	\$2,076.00	200 foot path, add one foot to width at three entries
Improvement #5 Water Closets and Toilet Compartments													
C20001003100	2	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$2,260.00	One per building in male and female restrooms.	C20001003100	8	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$9,040.00	One in each male and female restrooms.
D25001001500	2	Install accessible stall	Ea.	\$2,400.00	\$4,800.00	One per building in male and female restrooms.	D25001001500	8	Install accessible stall	Ea.	\$2,400.00	\$19,200.00	One in each male and female restrooms.
D25001001600	2	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$295.00	One per building in male and female restrooms.	D25001001600	8	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$1,180.00	One in each male and female restrooms.
D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per building in male and female restrooms.	D25001001800	8	Replace toilet in an existing location	Ea.	\$870.00	\$6,960.00	One in each male and female restrooms.

Appendix C (continued)

Small Hotel- 2 Story, 26,000 square feet						Large Hotel - 10 story, 236,000 square feet							
<i>Improvement # 6 Knee and Toe Clearance</i>													
C15001001000	3	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$1,440.00	One guestroom per floor and one in lobby	C15001001000	11	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$5,280.00	One guestroom per floor and one in lobby
C15001001100	3	Remove apron below plastic laminate counter	Ea.	\$89.50	\$268.50	One guestroom per floor and one in lobby	C15001001100	11	Remove apron below plastic laminate counter	Ea.	\$89.50	\$984.50	One guestroom per floor and one in lobby
C15001001400	3	Lower 36" wide section of counter	Ea.	\$331.50	\$994.50	One guestroom per floor and one in lobby	C15001001400	11	Lower 36" wide section of counter	Ea.	\$331.50	\$3,646.50	One guestroom per floor and one in lobby
<i>Improvement # 8 Restaurant and Bar Area</i>													
C15001001000	2	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$960.00	One in restaurant and one in bar area	C15001001000	2	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$960.00	One in restaurant and one in bar area
C15001001100	2	Remove apron below plastic laminate counter	Ea.	\$89.50	\$179.00	Restaurant / bar restrooms	C15001001100	2	Remove apron below plastic laminate counter	Ea.	\$89.50	\$179.00	Restaurant / bar restrooms
C15001002100	10	Replace fixed seating with movable tables and chairs	Ea.	\$274.00	\$2,740.00	In restaurant	C15001002100	20	Replace fixed seating with movable tables and chairs	Ea.	\$274.00	\$5,480.00	In restaurant
C15001002200	1	Lower section of bar (wood)	Ea.	\$775.00	\$775.00	In bar	C15001002200	2	Lower section of bar (wood)	Ea.	\$775.00	\$1,550.00	In bar
C20001002900	2	Widen existing stud wall opening & replace w/ solid wood door	Ea.	\$940.00	\$1,880.00	Safe entry and exit	C20001002900	2	Widen existing stud wall opening & replace w/ solid wood door	Ea.	\$940.00	\$1,880.00	Safe entry and exit
<i>Improvement # 9 Portable Alarms</i>													
D60001002700	2	Install new audible/visual alarm	Ea.	\$241.00	\$482.00	One per floor	D60001002700	10	Install new audible/visual alarm	Ea.	\$241.00	\$2,410.00	One per floor
<i>Improvement # 10 Visible Fire Alarm Requirements</i>													
D60001002700	2	Install new audible/visual alarm	Ea.	\$241.00	\$482.00	One per floor	D60001002700	10	Install new audible/visual alarm	Ea.	\$241.00	\$2,410.00	One per floor

Appendix D. Small Restaurant Barrier Removal Costs

Assembly	Quantity	Description of Improvement	UOM	Cost per Unit	Extended Cost	Basis
<i>Improvement #1 Employee Work Areas</i>						
C15001001100	2	Remove apron below plastic laminate counter	Ea.	\$89.50	\$179.00	One per floor in employee only restrooms, male and female
C15001001400	2	Lower 36" wide section of counter	Ea.	\$331.50	\$663.00	One per floor in employee only restrooms, male and female
C15001002700	1	Install accessible wood shelf and pole	Ea.	\$198.00	\$198.00	One per floor
C15001002900	1	Lower 2 coat hooks	Ea.	\$114.00	\$114.00	One pair per floor
C20001003100	3	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$3,390.00	Three per floor
C20001003400	1	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$1,755.00	One pair per floor
C20001004000	5	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$1,077.50	For each door replacement
C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building
D25001001700	2	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$2,328.00	One per floor in employee only restrooms, male and female
D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per floor in employee only restrooms, male and female
D25001002100	1	Lower urinal	Ea.	\$845.00	\$845.00	One per floor
D25001002400	2	Lower existing sink	Ea.	\$1,180.00	\$2,360.00	One per floor in employee only restrooms, male and female
D25001002500	2	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$630.00	One per floor in employee only restrooms, male and female
D25001002600	2	Wrap pipe with insulation	Ea.	\$32.50	\$65.00	One per floor in employee only restrooms, male and female
D25001002800	2	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$460.00	Two per floor in employee only restrooms, male and female
D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor in employee only restrooms, male and female
D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per floor
D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per floor
D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per floor
D60001002100	1	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002200	1	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002300	1	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$877.00	One set of five per floor
D60001002400	1	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$901.00	One set of five per floor
D60001003200	2	Install emergency communications device	Ea.	\$1,793.00	\$3,586.00	One per floor outside employee only restrooms, male and female
<i>Improvement #2 Public Entrances</i>						
C20001001700	1	Install new storefront door	Ea.	\$3,500.00	\$3,500.00	One per building
C20001002100	1	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$5,825.00	One per building
C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building
C35001001000	200	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$1,930.00	10 x 20 vestibule area
C35001001300	162	Install absorbent mat	S.F.	\$18.81	\$3,047.22	9 x 18 mat
D45001001000	1	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$118.50	One per building
G20209001200	2	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$2,500.00	Two per building
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section
G20409509000	2	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$192.00	1 every 100 feet

Appendix D (continued)

Assembly	Quantity	Description of Improvement	UOM	Cost per Unit	Extended Cost	Basis
<i>Improvement #3 Reach Ranges</i>						
C15001001800	1	Lower wall-mounted information rack	Ea.	\$270.51	\$270.51	One per floor
C15001002700	1	Install accessible wood shelf and pole	Ea.	\$198.00	\$198.00	One per floor
C15001002900	1	Lower 2 coat hooks	Ea.	\$114.00	\$114.00	One set per floor
D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor in employee only restrooms, male and female
D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per floor
D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per floor
D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per floor
D60001002100	1	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002200	1	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002300	1	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$877.00	One set of five per floor
D60001002400	1	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$901.00	One set of five per floor
<i>Improvement #4 Walking Surfaces</i>						
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section
G20301109930	1	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$660.00	One per building
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width
<i>Improvement #5 Water Closets and Toilet Compartments</i>						
C20001003100	2	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$2,260.00	One per floor in restrooms, male and female.
D25001001500	2	Install accessible stall	Ea.	\$2,400.00	\$4,800.00	One per floor in restrooms, male and female.
D25001001600	2	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$295.00	One per floor in restrooms, male and female.
D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per floor in restrooms, male and female.
<i>Improvement #6 Knee and Toe Clearance</i>						
C15001001000	1	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$480.00	One per floor
C15001001100	1	Remove apron below plastic laminate counter	Ea.	\$89.50	\$89.50	One per floor
C15001001400	1	Lower 36" wide section of counter	Ea.	\$331.50	\$331.50	One per floor
<i>Improvement #8 Restaurant and Bar Area</i>						
C15001001000	2	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$960.00	One in restaurant and one in bar area
C15001001100	2	Remove apron below plastic laminate counter	Ea.	\$89.50	\$179.00	Restaurant / bar restrooms
C15001002100	10	Replace fixed seating with movable tables and chairs	Ea.	\$274.00	\$2,740.00	In restaurant
C15001002200	1	Lower section of bar (wood)	Ea.	\$775.00	\$775.00	In bar
C20001002900	2	Widen existing stud wall opening & replace w/ solid wood door	Ea.	\$940.00	\$1,880.00	Safe entry and exit

Appendix E. Comparison of Small Retail vs. Large Retail Barrier Removal Costs

Small Retail- 1 Story, 7,000 square feet						Large Retail - 1 story, 36,000 square feet							
<i>Improvement #1 Employee Work Areas</i>													
C15001001100	2	Remove apron below plastic laminate counter	Ea.	\$89.50	\$179.00	One per floor in employee only restrooms, male and female	C15001001100	2	Remove apron below plastic laminate counter	Ea.	\$89.50	\$179.00	One per floor in employee only restrooms, male and female
C15001001400	2	Lower 36" wide section of counter	Ea.	\$331.50	\$663.00	One per floor in employee only restrooms, male and female	C15001001400	2	Lower 36" wide section of counter	Ea.	\$331.50	\$663.00	One per floor in employee only restrooms, male and female
C15001002700	1	Install accessible wood shelf and pole	Ea.	\$198.00	\$198.00	One per floor	C15001002700	1	Install accessible wood shelf and pole	Ea.	\$198.00	\$198.00	One per floor
C15001002900	1	Lower 2 coat hooks	Ea.	\$114.00	\$114.00	One pair per floor	C15001002900	1	Lower 2 coat hooks	Ea.	\$114.00	\$114.00	One pair per floor
C20001003100	3	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$3,390.00	Three per floor	C20001003100	3	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$3,390.00	Three per floor
C20001003400	1	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$1,755.00	One pair per floor	C20001003400	1	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$1,755.00	One pair per floor
C20001004000	5	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$1,077.50	For each door replacement	C20001004000	5	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$1,077.50	For each door replacement
C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building	C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entries
C20002001100	32	Install wing walls	S.F.	\$5.79	\$185.28	One set of wing walls per floor	C20002001100	32	Install wing walls	S.F.	\$5.79	\$185.28	One set of wing walls per floor
D25001001200	1	Lower existing fountain	Ea.	\$713.00	\$713.00	One per floor	D25001001200	1	Lower existing fountain	Ea.	\$713.00	\$713.00	One per floor
D25001001700	2	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$2,328.00	One per floor in employee only restrooms, male and female	D25001001700	2	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$2,328.00	One per floor in employee only restrooms, male and female
D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per floor in employee only restrooms, male and female	D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per floor in employee only restrooms, male and female
D25001002100	1	Lower urinal	Ea.	\$845.00	\$845.00	One per floor	D25001002100	1	Lower urinal	Ea.	\$845.00	\$845.00	One per floor
D25001002400	2	Lower existing sink	Ea.	\$1,180.00	\$2,360.00	One per floor in employee only restrooms, male and female	D25001002400	2	Lower existing sink	Ea.	\$1,180.00	\$2,360.00	One per floor in employee only restrooms, male and female
D25001002500	2	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$630.00	One per floor in employee only restrooms, male and female	D25001002500	2	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$630.00	One per floor in employee only restrooms, male and female

Appendix E (continued)

Small Retail- 1 Story, 7,000 square feet						Large Retail - 1 story, 36,000 square feet							
D25001002600	2	Wrap pipe with insulation	Ea.	\$32.50	\$65.00	One per floor in employee only restrooms, male and female	D25001002600	2	Wrap pipe with insulation	Ea.	\$32.50	\$65.00	One per floor in employee only restrooms, male and female
D25001002800	4	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$920.00	Two per floor in employee only restrooms, male and female	D25001002800	4	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$920.00	Two per floor in employee only restrooms, male and female
D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor in employee only restrooms, male and female	D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor in employee only restrooms, male and female
D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per floor	D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per floor
D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per floor	D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per floor
D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per floor	D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per floor
D60001002100	1	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor	D60001002100	1	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002200	1	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor	D60001002200	1	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002300	1	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$877.00	One set of five per floor	D60001002300	1	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$877.00	One set of five per floor
D60001002400	1	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$901.00	One set of five per floor	D60001002400	1	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$901.00	One set of five per floor
D60001002700	1	Install new audible/visual alarm	Ea.	\$241.00	\$241.00	One per floor	D60001002700	1	Install new audible/visual alarm	Ea.	\$241.00	\$241.00	One per floor
D60001003200	2	Install emergency communications device	Ea.	\$1,793.00	\$3,586.00	One per floor outside employee only restrooms, male and female	D60001003200	2	Install emergency communications device	Ea.	\$1,793.00	\$3,586.00	One per floor outside employee only restrooms, male and female
Improvement #2 Public Entrances													
C20001001700	1	Install new storefront door	Ea.	\$3,500.00	\$3,500.00	One per building	C20001001700	2	Install new storefront door	Ea.	\$3,500.00	\$7,000.00	Front and rear entry
C20001002100	1	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$5,825.00	One per building	C20001002100	2	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$11,650.00	Front and rear entry
C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building	C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entry
C35001001000	200	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$1,930.00	10 x 20 vestibule area	C35001001000	400	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$3,860.00	10 x 20 vestibule area, front and rear entry
C35001001300	162	Install absorbent mat	S.F.	\$18.81	\$3,047.22	9 x 18 mat	C35001001300	324	Install absorbent mat	S.F.	\$18.81	\$6,094.44	9 x 18 mat
D45001001000	1	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$118.50	One per building	D45001001000	2	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$237.00	Front and rear entry

Appendix E (continued)

Small Retail- 1 Story, 7,000 square feet						Large Retail - 1 story, 36,000 square feet							
G20209001200	2	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$2,500.00	Two per building	G20209001200	4	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$5,000.00	Front and rear entry
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width	G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	Front and rear entry
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section	G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section
G20409509000	2	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$192.00	1 every 100 feet	G20409509000	4	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$384.00	1 every 100 feet
<i>Improvement #3 Reach Ranges</i>													
C15001001800	1	Lower wall-mounted information rack	Ea.	\$270.51	\$270.51	One per floor	C15001001800	1	Lower wall-mounted information rack	Ea.	\$270.51	\$270.51	One per floor
C15001002700	1	Install accessible wood shelf and pole	Ea.	\$198.00	\$198.00	One per floor	C15001002700	1	Install accessible wood shelf and pole	Ea.	\$198.00	\$198.00	One per floor
C15001002900	1	Lower 2 coat hooks	Ea.	\$114.00	\$114.00	One set per floor	C15001002900	1	Lower 2 coat hooks	Ea.	\$114.00	\$114.00	One set per floor
D25001001100	1	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$2,260.00	One per floor	D25001001100	1	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$2,260.00	One per floor
D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor in employee only restrooms, male and female	D25001002900	2	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$540.72	One per floor in employee only restrooms, male and female
D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per floor	D60001001600	1	Add signage to phone	Ea.	\$177.00	\$177.00	One per floor
D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per floor	D60001001700	1	Provide new accessible telephone	Ea.	\$149.00	\$149.00	One per floor
D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per floor	D60001001900	1	Install public text telephone	Ea.	\$1,510.00	\$1,510.00	One per floor
D60001002100	1	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor	D60001002100	1	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002200	1	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor	D60001002200	1	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$800.00	One set of five per floor
D60001002300	1	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$877.00	One set of five per floor	D60001002300	1	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$877.00	One set of five per floor
D60001002400	1	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$901.00	One set of five per floor	D60001002400	1	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$901.00	One set of five per floor

Appendix E (continued)

Small Retail- 1 Story, 7,000 square feet						Large Retail - 1 story, 36,000 square feet							
<i>Improvement #4 Walking Surfaces</i>													
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section	G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section
G20301109930	1	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$660.00	One per building	G20301109930	2	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$1,320.00	Front and rear entries
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width	G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	200 foot path, add one foot to width, front and rear entries
<i>Improvement #5 Water Closets and Toilet Compartments</i>													
C20001003100	2	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$2,260.00	One per floor in restrooms, male and female.	C20001003100	2	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$2,260.00	One per floor in restrooms, male and female.
D25001001500	2	Install accessible stall	Ea.	\$2,400.00	\$4,800.00	One per floor in restrooms, male and female.	D25001001500	2	Install accessible stall	Ea.	\$2,400.00	\$4,800.00	One per floor in restrooms, male and female.
D25001001600	2	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$295.00	One per floor in restrooms, male and female.	D25001001600	2	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$295.00	One per floor in restrooms, male and female.
D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per floor in restrooms, male and female.	D25001001800	2	Replace toilet in an existing location	Ea.	\$870.00	\$1,740.00	One per floor in restrooms, male and female.
<i>Improvement # 6 Knee and Toe Clearance</i>													
C15001001000	1	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$480.00	One per floor	C15001001000	1	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$480.00	One per floor
C15001001100	1	Remove apron below plastic laminate counter	Ea.	\$89.50	\$89.50	One per floor	C15001001100	1	Remove apron below plastic laminate counter	Ea.	\$89.50	\$89.50	One per floor
C15001001400	1	Lower 36" wide section of counter	Ea.	\$331.50	\$331.50	One per floor	C15001001400	1	Lower 36" wide section of counter	Ea.	\$331.50	\$331.50	One per floor
							C15001002600	1	Modify kitchens	Ea.	\$1,445.00	\$1,445.00	One per floor
<i>Improvement # 7 Changing Rooms</i>													
C15001002400	2	Install dressing rooms	Ea.	\$2,300.00	\$4,600.00	Male and female	C15001002400	4	Install dressing rooms	Ea.	\$2,300.00	\$9,200.00	Four per floor

Appendix F. Comparison of Small Office vs. Large Office Barrier Removal Costs

Small Office- 2 Story, 7,000 square feet					Large Office - 3 story, 49,000 square feet								
<i>Improvement #1 Employee Work Areas</i>													
C15001001100	4	Remove apron below plastic laminate counter	Ea.	\$89.50	\$358.00	One per floor in employee only restrooms, male and female	C15001001100	6	Remove apron below plastic laminate counter	Ea.	\$89.50	\$537.00	One per floor in employee only restrooms, male and female
C15001001400	4	Lower 36" wide section of counter	Ea.	\$331.50	\$1,326.00	One per floor in employee only restrooms, male and female	C15001001400	6	Lower 36" wide section of counter	Ea.	\$331.50	\$1,989.00	One per floor in employee only restrooms, male and female
C15001002600	2	Modify kitchens	Ea.	\$1,445.00	\$2,890.00	One per floor	C15001002600	3	Modify kitchens	Ea.	\$1,445.00	\$4,335.00	One per floor
C15001002700	2	Install accessible wood shelf and pole	Ea.	\$198.00	\$396.00	One per floor	C15001002700	3	Install accessible wood shelf and pole	Ea.	\$198.00	\$594.00	One per floor
C15001002900	2	Lower 2 coat hooks	Ea.	\$114.00	\$228.00	One pair per floor	C15001002900	3	Lower 2 coat hooks	Ea.	\$114.00	\$342.00	One pair per floor
							D20001001200	1	Install interior unenclosed lift	Ea.	\$7,775.00	\$7,775.00	One area not reached by elevator
C20001003100	6	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$6,780.00	Three per floor	C20001003100	9	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$10,170.00	Three per floor
							C20001003400	3	Widen existing stud wall opening & replace w/ double hollow metal door	Ea.	\$1,755.00	\$5,265.00	One pair per floor
C20001004000	10	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$2,155.00	For each door replacement	C20001004000	15	Replace existing lockset with lever-handled lockset	Ea.	\$215.50	\$3,232.50	For each door replacement
							C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entries
C20002001100	64	Install wing walls	S.F.	\$5.79	\$370.56	One set of wing walls per floor	C20002001100	96	Install wing walls	S.F.	\$5.79	\$555.84	One set of wing walls per floor
D25001001200	2	Lower existing fountain	Ea.	\$713.00	\$1,426.00	One per floor	D25001001200	3	Lower existing fountain	Ea.	\$713.00	\$2,139.00	One per floor
D25001001700	4	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$4,656.00	One per floor in employee only restrooms, male and female	D25001001700	6	Add new toilet partition with 36" door	Ea.	\$1,164.00	\$6,984.00	One per floor in employee only restrooms, male and female
D25001001800	4	Replace toilet in an existing location	Ea.	\$870.00	\$3,480.00	One per floor in employee only restrooms, male and female	D25001001800	6	Replace toilet in an existing location	Ea.	\$870.00	\$5,220.00	One per floor in employee only restrooms, male and female
D25001002100	2	Lower urinal	Ea.	\$845.00	\$1,690.00	One per floor	D25001002100	3	Lower urinal	Ea.	\$845.00	\$2,535.00	One per floor
D25001002400	4	Lower existing sink	Ea.	\$1,180.00	\$4,720.00	One per floor in employee only restrooms, male and female	D25001002400	6	Lower existing sink	Ea.	\$1,180.00	\$7,080.00	One per floor in employee only restrooms, male and female

Appendix F (continued)

Small Office- 2 Story, 7,000 square feet						Large Office - 3 story, 49,000 square feet							
D25001002500	4	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$1,260.00	One per floor in employee only restrooms, male and female	D25001002500	6	Replace knob faucets with paddle faucets	Ea.	\$315.00	\$1,890.00	One per floor in employee only restrooms, male and female
D25001002600	4	Wrap pipe with insulation	Ea.	\$32.50	\$130.00	One per floor in employee only restrooms, male and female	D25001002600	6	Wrap pipe with insulation	Ea.	\$32.50	\$195.00	One per floor in employee only restrooms, male and female
D25001002800	8	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$1,840.00	Two per floor in employee only restrooms, male and female	D25001002800	12	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$230.00	\$2,760.00	Two per floor in employee only restrooms, male and female
D25001002900	4	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$1,081.44	One per floor in employee only restrooms, male and female	D25001002900	6	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$1,622.16	One per floor in employee only restrooms, male and female
							C30001001500	96	Fill in open stair riser (metal pan stairs)	Ea.	\$60.50	\$5,808.00	Two flights per floor. Sixteen risers per flight
							C30001001800	96	Bevel stair nosing (metal pan)	Ea.	\$60.50	\$5,808.00	Two flights per floor. Sixteen risers per flight
							C30001002600	6	Add 12" extension to existing wall-mounted pipe railing	Ea.	\$122.00	\$732.00	One per flight, two flights per floor
							C30001002700	6	Add 12" extension to existing freestanding pipe railing	Ea.	\$236.50	\$1,419.00	One per flight, two flights per floor
							C30001003200	2	Install barrier under stairs	Ea.	\$15,300.00	\$30,600.00	One barrier per stair tower
D60001001600	2	Add signage to phone	Ea.	\$177.00	\$354.00	One per floor	D60001001600	3	Add signage to phone	Ea.	\$177.00	\$531.00	One per floor
D60001001700	2	Provide new accessible telephone	Ea.	\$149.00	\$298.00	One per floor	D60001001700	3	Provide new accessible telephone	Ea.	\$149.00	\$447.00	One per floor
D60001001900	2	Install public text telephone	Ea.	\$1,510.00	\$3,020.00	One per floor	D60001001900	3	Install public text telephone	Ea.	\$1,510.00	\$4,530.00	One per floor
D60001002100	2	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002100	3	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor
D60001002200	2	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002200	3	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor
D60001002300	2	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$1,754.00	One set of five per floor	D60001002300	3	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$2,631.00	One set of five per floor
D60001002400	2	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$1,802.00	One set of five per floor	D60001002400	3	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$2,703.00	One set of five per floor
D60001002700	2	Install new audible/visual alarm	Ea.	\$241.00	\$482.00	One per floor	D60001002700	3	Install new audible/visual alarm	Ea.	\$241.00	\$723.00	One per floor

Appendix F (continued)

Small Office- 2 Story, 7,000 square feet							Large Office - 3 story, 49,000 square feet						
D60001003200	4	Install emergency communications device	Ea.	\$1,793.00	\$7,172.00	One per floor outside employee only restrooms, male and female	D60001003200	6	Install emergency communications device	Ea.	\$1,793.00	\$10,758.00	One per floor outside employee only restrooms, male and female
<i>Improvement #2 Public Entrances</i>													
C20001001700	1	Install new storefront door	Ea.	\$3,500.00	\$3,500.00	One per building	C20001001700	2	Install new storefront door	Ea.	\$3,500.00	\$7,000.00	Front and rear entries
C20001002100	1	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$5,825.00	One per building	C20001002100	2	Install automatic door opener with infrared activator	Ea.	\$5,825.00	\$11,650.00	Front and rear entries
C20001005400	1	Extend vestibule inside building	Ea.	\$2,700.00	\$2,700.00	One per building	C20001005400	2	Extend vestibule inside building	Ea.	\$2,700.00	\$5,400.00	Front and rear entries
C35001001000	200	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$1,930.00	10 x 20 vestibule area	C35001001000	400	Remove vinyl tile and replace with unglazed quarry tile	S.F.	\$9.65	\$3,860.00	10 x 20 vestibule area
C35001001300	162	Install absorbent mat	S.F.	\$18.81	\$3,047.22	9 x 18 mat	C35001001300	324	Install absorbent mat	S.F.	\$18.81	\$6,094.44	9 x 18 mat
D45001001000	1	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$118.50	One per building	D45001001000	2	Anchor plastic exterior signage to masonry wall	Ea.	\$118.50	\$237.00	Front and rear entries
D60001001100	1	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$465.35	One per building	D60001001100	2	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$930.70	Front and rear entries
G20209001200	2	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$2,500.00	Two per building	G20209001200	4	Stripe vehicle space and access aisle, install pole mounted signage, install concrete curb cut	Ea.	\$1,250.00	\$5,000.00	Two at each front and rear entries
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width	G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	200 foot path, add one foot to width, front and rear entries
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section	G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section
G20409509000	2	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$192.00	1 every 100 feet	G20409509000	4	Relocate objects in path (e.g., bench, bolted to surface)	Ea.	\$96.00	\$384.00	1 every 100 feet
<i>Improvement #3 Reach Ranges</i>													
C15001001800	2	Lower wall-mounted information rack	Ea.	\$270.51	\$541.02	One per floor	C15001001800	3	Lower wall-mounted information rack	Ea.	\$270.51	\$811.53	One per floor
C15001002700	2	Install accessible wood shelf and pole	Ea.	\$198.00	\$396.00	One per floor	C15001002700	3	Install accessible wood shelf and pole	Ea.	\$198.00	\$594.00	One per floor

Appendix F (continued)

Small Office- 2 Story, 7,000 square feet						Large Office - 3 story, 49,000 square feet							
C15001002900	2	Lower 2 coat hooks	Ea.	\$114.00	\$228.00	One set per floor	C15001002900	3	Lower 2 coat hooks	Ea.	\$114.00	\$342.00	One set per floor
D20001002200	1	Lower existing elevator panel	Ea.	\$595.00	\$595.00	One per elevator	D20001002200	1	Lower existing elevator panel	Ea.	\$595.00	\$595.00	One per elevator
D20001003100	2	Lower hallway call buttons	Ea.	\$380.50	\$761.00	One per floor	D20001003100	3	Lower hallway call buttons	Ea.	\$380.50	\$1,141.50	One per floor
D25001001100	2	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$4,520.00	One per floor	D25001001100	3	Install new low, wall-mounted fountain	Ea.	\$2,260.00	\$6,780.00	One per floor
D25001002900	4	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$1,081.44	One per floor in employee only restrooms, male and female	D25001002900	6	Lower dispenser, screwed to wall (gypsum board on metal studs)	Ea.	\$270.36	\$1,622.16	One per floor in employee only restrooms, male and female
D60001001000	1	Lower existing buzzer/intercom panel in 8" block wall (painted)	Ea.	\$347.65	\$347.65	One per building	D60001001000	2	Lower existing buzzer/intercom panel in 8" block wall (painted)	Ea.	\$347.65	\$695.30	Front and rear entries
D60001001100	2	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$930.70	One per floor	D60001001100	3	Lower existing buzzer/intercom panel in gypsum board/metal stud wall	Ea.	\$465.35	\$1,396.05	One per floor
D60001001600	2	Add signage to phone	Ea.	\$177.00	\$354.00	One per floor	D60001001600	3	Add signage to phone	Ea.	\$177.00	\$531.00	One per floor
D60001001700	2	Provide new accessible telephone	Ea.	\$149.00	\$298.00	One per floor	D60001001700	3	Provide new accessible telephone	Ea.	\$149.00	\$447.00	One per floor
D60001001900	2	Install public text telephone	Ea.	\$1,510.00	\$3,020.00	One per floor	D60001001900	3	Install public text telephone	Ea.	\$1,510.00	\$4,530.00	One per floor
D60001002100	2	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002100	3	Lower 5 light switches, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor
D60001002200	2	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$1,600.00	One set of five per floor	D60001002200	3	Raise 5 outlets, gypsum/metal stud wall	Ea.	\$800.00	\$2,400.00	One set of five per floor
D60001002300	2	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$1,754.00	One set of five per floor	D60001002300	3	Install 5 outlets, gypsum/metal stud wall	Ea.	\$877.00	\$2,631.00	One set of five per floor
D60001002400	2	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$1,802.00	One set of five per floor	D60001002400	3	Install 5 rocker switches, gypsum/metal stud wall	Ea.	\$901.00	\$2,703.00	One set of five per floor
\$19,828.81													
Improvement #4 Walking Surfaces													
G20301109030	4	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$4,940.00	Four sections of ramp at 12 feet per section	G20301109030	8	Repave asphalt ramp to shallower slope, including 1-1/2" pipe handrails	Ea.	\$1,235.00	\$9,880.00	Eight sections of ramp at 12 feet per section
G20301109930	1	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$660.00	One per building	G20301109930	2	Install flared sides, existing curb cut (asphalt sidewalk)	Ea.	\$660.00	\$1,320.00	Front and rear entries
G20301109010	200	Widen existing asphalt pathway	S.F.	\$3.46	\$692.00	200 foot path, add one foot to width	G20301109010	400	Widen existing asphalt pathway	S.F.	\$3.46	\$1,384.00	200 foot path, add one foot to width, front and rear entries

Appendix F (continued)

Small Office- 2 Story, 7,000 square feet						Large Office - 3 story, 49,000 square feet							
<i>Improvement #5 Water Closets and Toilet Compartments</i>													
C20001003100	4	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$4,520.00	One per floor in restrooms, male and female.	C20001003100	6	Widen existing stud wall opening & replace w/ metal door	Ea.	\$1,130.00	\$6,780.00	One per floor in restrooms, male and female.
D25001001500	4	Install accessible stall	Ea.	\$2,400.00	\$9,600.00	One per floor in restrooms, male and female.	D25001001500	6	Install accessible stall	Ea.	\$2,400.00	\$14,400.00	One per floor in restrooms, male and female.
D25001001600	4	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$590.00	One per floor in restrooms, male and female.	D25001001600	6	Install grab bar, gypsum/metal stud wall with ceramic tile	Ea.	\$147.50	\$885.00	One per floor in restrooms, male and female.
D25001001800	4	Replace toilet in an existing location	Ea.	\$870.00	\$3,480.00	One per floor in restrooms, male and female.	D25001001800	6	Replace toilet in an existing location	Ea.	\$870.00	\$5,220.00	One per floor in restrooms, male and female.
<i>Improvement # 6 Knee and Toe Clearance</i>													
C15001001000	2	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$960.00	One per floor	C15001001000	3	Remove base cabinets, add additional bracing	Ea.	\$480.00	\$1,440.00	One per floor
C15001001100	2	Remove apron below plastic laminate counter	Ea.	\$89.50	\$179.00	One per floor	C15001001100	3	Remove apron below plastic laminate counter	Ea.	\$89.50	\$268.50	One per floor
C15001001400	2	Lower 36" wide section of counter	Ea.	\$331.50	\$663.00	One per floor	C15001001400	3	Lower 36" wide section of counter	Ea.	\$331.50	\$994.50	One per floor
C15001002600	2	Modify kitchens	Ea.	\$1,445.00	\$2,890.00	One per floor	C15001002600	3	Modify kitchens	Ea.	\$1,445.00	\$4,335.00	One per floor