# Association of Accessibility Professionals (APA) Certification for the Built Environment (APAC-BE)

## Job Analysis Technical Report Summary

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# 🔻 Introduction

The purpose of this project was to assist the Association of Accessibility Professionals (APA) in developing the validation evidence for a new Built Environment Certification program. This report documents the job analysis study that took place from Fall 2021 through Summer 2022.

The job analysis process described in this report complies with all relevant professional and legal guidelines for the development of licensure and certification examinations. The specific steps were designed to meet both the project deadline as well as the requirements of the *Standards for Educational and Psychological Testing* (American Educational Research Association, 2014), the *Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial and Organizational Psychology, Inc., 2018), and the *Uniform Guidelines on Employee Selection Procedures* (1978).

# 🔻 Method

## Overview

Detailed descriptions of the Job Analysis process and its outcomes are described in the remainder of this report. Each of the following job analysis steps will be detailed:

- Minimally Acceptable Candidate (MAC) Profile Development
- Identifying the important and frequently performed tasks (including information on the overall criticality of the KSs; and the need for each KS at the time of certification)
- Linking knowledge and skills to job task;
- Creating an examination plan or blueprint;
- Identifying relevant reference material; and
- Building standard setting minimally acceptable candidate profiles.

## Profile Development

As part of the job analysis process, profiles of the Minimally Acceptable Candidate (MAC) for the examination were developed. The profiles identify the critical requirements for those in the profession (i.e., those behaviors that make a crucial difference between performing effectively and ineffectively). The critical requirements were identified using the critical incident technique, which consists of collecting reports of behavioral-instances (i.e., incidents) that constitute job performance at various levels of effectiveness. Critical incidents are actual reports from SMEs of exceptionally effective or ineffective behaviors for accomplishing job duties. SMEs draw from their own recollection of job-related behaviors that resulted in noteworthy consequences, both good and bad. These inputs are then consolidated into the description of the MAC.

To meet APAC's standards, "all individuals who pass the APAC-BE exam will have demonstrated knowledge of the Federal Accessibility Requirements and the Model Codes and Standards and how each

applies to the built environment. APAC credential holders will also be able to interpret scoping and technical requirements for any given facility."

# Develop and Review Task and KS Statements

The meetings began with an orientation and PowerPoint presentation regarding the importance of job analysis to a certification exam, the job analysis process and steps, and guidelines for writing and reviewing task, and KS statements. The participants then reviewed the draft task and KS statements. The draft task and KS statements were presented on worksheets for the SMEs to review individually prior to group discussion. The SMEs were instructed to review the task and KS statements for relevance; accuracy and clarity; appropriate terminology; completeness; inclusion of all general aspects of the job; inconsistencies; and redundancy. Following their individual task and KS statement review, a full panel review was conducted with all SMEs in the meeting, with a CPS HR Consultant recording all changes made in one master document. Additional task or KS statements were written during the panel if they were not covered by the initial list. The review of task and KS statements activity continued until the SMSs felt that the list of statements represented an accurate *and* comprehensive list of the KSs that might be needed to perform the job tasks of each trade.

# Practice Analysis Questionnaire

Once the task and KS statements were finalized, a Job Analysis survey was built for distribution to Accessibility Professionals nation-wide (Appendix D). The Practice Analysis Questionnaire included three sections: background information questions, 28 task statements, and 63 knowledge and skill statements. The Practice Analysis Questionnaire data were collected between March 22, 2022, and April 21, 2022. In all, 269 surveys were started, but only 151 surveys were fully completed. To be as inclusive as possible, all valid data were included in all possible analyses.

# Practice Analysis Survey Data Analysis

Included in the survey's instructions was information on how to rate the task and KS statements. Namely, respondents rated each task statement using the two scales: Frequency and Importance. Frequency was rated on a 6-point scale with a response range from 0 (*Never*) through 5 (*Hourly*). A response of 1 indicates the task is performed at least once while employed on the job. Each of the three remaining responses is accompanied by a phrase that describes how often a task is performed, with the larger values indicating greater frequency.

Importance was rated on a 4-point scale with a response range from 0 (*Not important)* through 3 (*Very important*). Each of the two remaining responses is accompanied by a phrase that describes a level of importance the task has for minimally acceptable performance on the job, with larger values indicating greater importance (i.e., somewhat important, important).

Respondents rated the KS statements on Importance and Needed at Certification, using a separate scale for each. Importance was rated by the same scale that is used to rate task Importance. Needed at

Certification was rated by a 2-point scale with a response range of 0 (*No*) to 1 (*Yes)*. Each response indicates whether or not a knowledge or skill is needed at the time of certification.

**Task Rating Criteria**. This analysis was conducted to identify the tasks performed by Accessibility Professionals in the Built Environment as part of their job. Based on the *CPS HR Job Analysis Guidelines* (CPS HR, 2008), for a task to be retained, *both* of the following criteria had to be met:

1. *At least* 60% of the respondents had to indicate that the task is performed or is part of the job (i.e., assign a task Frequency rating of 1 or greater).
2. The mean Importance rating, for those respondents who provided a Frequency rating of 1 or greater, had to be *at least* 1.50, which is the midpoint of the rating scale.

Task statements with ratings close to the retention criteria were flagged for review by the SMEs before the data results were considered final. Tasks with frequency ratings with averages ranging from 1.25 to 1.75 were flagged for review. A CPS HR Consultant facilitated a discussion regarding whether to retain or exclude that task from further analysis, and consensus was required on all judgments. All 28 Task Statements were retained as a result of the practice analysis survey.

Retained tasks were also grouped into the following 8 Test Content Domains or Categories:
1. Understanding the Accessibility Requirements in general.
2. Determining what services are to be provided by the accessibility professional.
3. Determining which Accessibility Requirements are applicable to the project within the scope of work.
4. Using the appropriate methodologies (e.g., best practices, tools, processes, procedures, approach) to accurately collect and report information.
5. Reviewing plans, specifications, and other documentation provided by the client to identify potential issues prior to construction.
6. Conducting site visits.
7. Writing, explaining, and defending a report.
8. Assisting clients with post report services.

**KS Rating Criteria.** This analysis was also conducted to identify the KSs necessary for minimally acceptable performance. In order for a KS statement to be retained, *both* of the following criteria had to be met:
1. At least 60% of the SMEs must have rated Needed at Certification at a level of 1.
2. The mean KS Importance rating for all respondents who provided a rating had to be at least 1.50, which is the midpoint of the rating scale.

KS statements with average ratings ranging from 1.25 to 1.75 were flagged for review by a panel of SMEs before the data results were considered final. Consensus was required on all judgments; when SMEs did not agree, the matter was discussed until consensus was attained. Through SME discussion of the survey results resulted in five KS Statements being removed (i.e., "16. Knowledge of the frequency at which various Accessibility Requirements are updated to assure the appropriate versions are applied."; "18. Knowledge of the procedures for obtaining a formal interpretation from the promulgating organizations or enforcing authorities."; "49. Skill to defend the use of "conventional industry tolerances" for each applicable condition."; "61. Knowledge of what information is critical to include in a contract."; and "62.

Knowledge of the limitations other professional licenses may impose when asked to present possible solutions to design or construction errors.").

## Link KSs to Task Domains

The CPS HR project team developed the materials for the linkage phase of the job analysis using the information on the tasks and KSs gathered and rated during prior job analysis activities. The linkage phase was conducted to meet the requirements of section 15C(3) in the Uniform Guidelines on Employee Selection Procedures (1978) which requires: "The relationship between each knowledge, skill, or ability and each work behavior, as well as the method used to determine the relationship, should be provided (essential)."

In this process, SMEs linked KSs to task domains. Each SME individually evaluated a given KS statement in terms of its importance to the performance of tasks in a given job domain, using a linkage worksheet. The linkage rating worksheet contained a matrix of 464 cells (58 KS statements x 8 task domains) on which to record the linkage ratings. A binary rating was made using a 2-point scale in which 0 = Not Needed and 1 = Needed. Judgments were made independently and then averaged. For each of the 464 ratings, CPS HR staff tallied the number of linkage ratings that SMEs rated as 1. For a KS statement to be retained, it had to show one cell with at least 60% of the SMEs agreeing it was needed (rating of 1) to perform the tasks in that dimension. There were a total of 172 linkages found.

## Develop Examination Plan

**Draft Exam Plan.** Utilizing the Linkage Analysis data, CPS HR calculated a draft exam plan. Specifically, the draft exam plan defines what percentage of the relevant MS statements come from each exam category. Here, the analysis suggested that categories should contain between 1.91% (Assisting clients with post report services.) and 21.26% (Writing, explaining, and defending a report.) of the exam's content. Table 1 shows the exact breakdown for each exam content category.

**Gather SME Input on Draft Exam Plan.** The decision regarding the number of examination items for each job domain involved two additional considerations: reliability and content coverage. During the panel, the CPS HR consultant provided an overview of the definition of, the purpose of, and considerations for an exam plan. This overview was followed with a review of the mathematically derived exam plan. The SME participants reviewed and discussed the exam plan to ensure it made sense, would result in reliable measurement of each job domain, showed a logical continuation from the existing exam plan, and demonstrated a logical progression. The weights assigned to the competencies for each examination level are presented in Table 2.

**Table 1.  Calculated Exam Plan**

| Domain Number | Domain | Total Tasks | Count of Linkages | Calculated Exam Weight |
|---|---|---|---|---|
| 1 | Understanding the Accessibility Requirements in general. | 5 | 25 | 11.68% |
| 2 | Determining what services are to be provided by the accessibility professional. | 4 | 18 | 8.41% |
| 3 | Determining which Accessibility Requirements are applicable to the project within the scope of work. | 11 | 22 | 10.28% |
| 4 | Using the appropriate methodologies (e.g., best practices, tools, processes, procedures, approach) to accurately collect and report information. | 8 | 29 | 13.55% |
| 5 | Reviewing plans, specifications, and other documentation provided by the client to identify potential issues prior to construction. | 8 | 35 | 16.36% |
| 6 | Conducting site visits. | 11 | 37 | 17.26% |
| 7 | Writing, explaining, and defending a report. | 7 | 44 | 20.56% |
| 8 | Assisting clients with post report services. | 5 | 4 | 1.87% |

**Table 2.  SME Approved Exam Plan**

| Domain Number | Domain | Difference between Calculated and SME Exam Weights | SME Exam Weight | Exam Items |
|---|---|---|---|---|
| 1 | Understanding the Accessibility Requirements in general. | -8.32% | 20% | 20 |
| 2 | Determining what services are to be provided by the accessibility professional. | 3.41% | 5% | 5 |
| 3 | Determining which Accessibility Requirements are applicable to the project within the scope of work. | -5.71% | 16% | 16 |
| 4 | Using the appropriate methodologies (e.g., best practices, tools, processes, procedures, approach) to accurately collect and report information. | -2.45% | 16% | 16 |
| 5 | Reviewing plans, specifications, and other documentation provided by the client to identify potential issues prior to construction. | 0.36% | 16% | 16 |
| 6 | Conducting site visits. | 0.29% | 17% | 17 |
| 7 | Writing, explaining, and defending a report. | 12.56% | 8% | 8 |
| 8 | Assisting clients with post report services. | -0.13% | 2% | 2 |
| | | | *Total Items:* | *100* |

# ⬤ Recommendations and Conclusion

The job analysis study conducted for the exam development process provides detailed documentation on the work of this profession. This information can also be used as a resource for other activities, such as developing training programs and evaluating continuing education programs.

To maintain a high-quality, legally-defensible certification program, the following test development activities should be performed. Each subsequent exam should contain a percentage of unique questions. Items that are not performing ideally (e.g., items without appropriate difficulty and good discrimination between high and low scoring candidates) should be replaced or edited. These steps help to ensure fair, high-quality exams that measure current concepts in the profession. SME review panels should be held each year to review all new and edited items, as well as items that might be impacted by changes to laws or professional standards. Additionally, professional testing standards indicate that job analysis data should be updated approximately every three to five years, or sooner if there are significant changes in the occupation.

CPS HR encourages APAC to include experimental items on examinations. Experimental items are new items included on an exam that do not count toward the candidates' final scores. The candidates are not able to identify experimental from regular exam items. In this way, statistical data is collected on the items before they may count toward an individual's score, thereby decreasing scoring adjustments (e.g., score with two correct answers, delete item from scoring) sometimes required when using untested items.

## Conclusion

This report documents the job analysis study, linkage results, and exam plan development for the APAC-BE Examination. The job analysis and exam plan development process described in this report complies with all relevant professional and legal guidelines. The specific procedures were designed to meet both the project deadline as well as the requirements of the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999), the Uniform Guidelines on Employee Selection Procedures (1978), and the *Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial and Organizational Psychology, Inc., 2003).

The project included extensive SME involvement during all stages of the job analysis. CPS HR project staff reviewed relevant literature and worked extensively with SMEs to develop a process to assess the tasks, knowledge, and skills required to perform the job duties of an Accessibility Professional in the Built Environment. The exam plan was developed from the job analysis data and SME judgments.

In developing this certification program, the APAC has established a standard for certification. Through acceptable performance on the certification examination, APAC can identify individuals who possess the knowledge and skills to competently perform the necessary work while protecting the best interest and safety of the general public.

# References

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