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ABSTRACT

Patterned after a previously successful Laborers-Associated General Contractors model named the Construction Skills Training Program, a demonstration project was implemented at five regional training centers. At least eight courses were created, combined, or revised. Four full-length audiovisual support pieces were completed. Three courses were created to provide a more structured career path for construction craft laborers (CCLs): An Orientation to the CCL, General Construction, and Foreman Preparedness. Courses combined and/or revised included the following: Asphalt Raking, Trench Protection and Principles of Pipe Laying, Concrete Practices and Procedures, and Practices and Procedures of Mason Tending. The project compared the cost efficiency and training effectiveness of the regional training concept against other models: fixed site concept (FSC), short-term mobile, and long-term mobile. For longer-term construction skills training, the FSC model was the easiest to present and the most effective and generated a structured course that was easily repeated. Advantages of national/regional training occurred in three areas: managing training activity, purchasing, and matching training to need. Disadvantages were cost of maintaining residential facilities and loss of local autonomy and ownership. An independent evaluation found that significant progress was achieved in conceptualizing and developing a career path for laborers, but much remained to be accomplished in implementing it. (YLB)

The Laborers-AGC Construction Skills Training Program

Final Performance Report

Cooperative Demonstration Grant
#V199C10007

by

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September 30, 1994

Laborers-AGC Construction Skills Training Program

COOPERATIVE
DEMONSTRATION
PROGRAM
#V199C10007

September 30, 1994

Part I Financial Status Report

Part II Final Performance Report

Part III Lessons Learned

Part IV Outside Evaluator Report

FINAL PERFORMANCE REPORT
COOPERATIVE DEMONSTRATION PROGRAM #V199C10007

THE CONSTRUCTION CRAFT LABORER (CCL) TRAINING PROGRAM

Late in 1991, the Laborers-AGC Education and Training Fund (L-AGC) received notification from the U.S. Department of Education (ED) that an application for assistance submitted by L-AGC for funding under the Cooperative Demonstration Program (Building Trades), CFDA #84.199C was authorized. On January 1, 1992, L-AGC began what was to become a two and one-half year project that provided marketable skills to almost 900 individuals and demonstrated the quality and effectiveness of training possible when education, labor, and industry work together. The program not only increased the standard of living for training participants through increased employment, but also provided a successful model for replication and standardized construction curriculum to other training providers.

As extracted from the original narrative, the project proposed the following six objectives:

1. Test the cost efficiency and effectiveness of regional training as a model, against several other variations.
2. Advance and certify skill levels and extend career options to all craft workers and trainees within L-AGC.
3. Produce adequate numbers of skilled craft workers to meet a growing industry demand.
4. Expand yearly hours worked by the membership.
5. Generate interest, commitment, and operation of regional training in other L-AGC sites and other industries.
6. Develop a new Public/Private sector relationship that will assist laborers in the industry to pursue higher educational activities.

It was envisioned that successful completion of these objectives would enable L-AGC, ED, and others to realize the following benefits:

- to determine the viability of regional training;
- to develop and deliver a set of products, procedures, and technical assistance that would assist other industries in replicating the regional training model, as well as to bring other elements of the L-AGC program into the existing regional model;
- to expand the industries contribution to its own training by improving the contribution and the collective bargaining process and by bringing manufacturers and public agencies into the training process;
- to provide adequate numbers of skilled craft workers to meet the increasing demand for their skills;
- to improve the quality of life and career opportunities for members. This includes continuing the expansion of opportunity for women and minorities

to become CCLs and for women and minority laborers to participate in the program. It also includes the opportunity to set and realize career goals along a formal career path that provides many opportunities for the membership;

- to improve public safety by providing trained and competent laborers for the industry;
- to improve the competitive position of signatory contractors by certifying individual skills and by moving to a type of performance testing and competency certification that indicates mastery level of trainees;
- to establish an expanded and enduring training program that will continue its operation long after government seed money ends; and,
- to improve the quality of workmanship throughout the industry.

REGIONAL TRAINING

Patterned after a previously successful L-AGC model named the Construction Skills Training Program (CSTP), this demonstration project was implemented at five regional training centers. Each center responded to training requests from the host state, as well as requests from adjacent states. Collectively, the five regional centers covered roughly 50% of the continental U.S., as well as Alaska and Hawaii.

The earlier CSTP model began in 1989 through the joint efforts of the L-AGC, the Laborers' International Union of North America (LIUNA), and the Associated General Contractors of America (AGC). Its purpose was to respond to industry demand for effective construction skill training. Earlier experiences clearly demonstrated that effective off-the-job construction skills training is not possible without the use of project-simulated training exercises and hands-on manipulative training. More importantly, the evaluation of the skills learned in construction training is not valid without the hands-on and/or job simulation components. Once this need for job simulation in training activities was established, the cost of the activity became quite evident. In order to respond to the increased cost of job simulation training, the regional concept was employed.

Although the funding for this demonstration project was granted by the U.S. Department of Education, the funding that developed the original CSTP model and will carry the program forward, is privately generated. Using the collective bargaining process, employees and employers contribute a percentage of their earnings into a trust fund designed to provide training for both interest groups. At the time of this writing, the average contribution rate in the U.S. is $0.21 per hour with the lowest at $0.07 per hour and the highest over $1.00 per hour.

During 1993, the 48 Laborers' Training Trust Funds in the U.S. generated slightly over $32,400,000 in private contributions. Although this sounds like a substantial amount, the U.S. Department of Commerce (USDOC) reported that spending for industrial and public work construction amounted to $222.2 billion during 1993. The $32 million spent for Laborers' training equates to less than 0.016% of the construction dollars spent in those markets. Further, the USDOC

estimate does not include spending in the commercial market, which they state, would double the heavy construction spending estimate.

When we compare our statistics with the percentage of the total market directed toward training in other countries, such as Germany, England, and Australia, we can clearly see that we have seriously underrated and underfunded U.S. training efforts.

In an effort to make the best of limited funding, our training trust funds began to regionalize. Initially, they were created on a local-union-by-local-union basis. Realizing that such small trust funds could not effectively address construction skills training, they began to merge, first, from local union to district council, then from district council to state-wide trusts, and now assisted by this demonstration project, from state-wide to multi-state, regional funds.

COURSE AND PRODUCT DEVELOPMENT

During the grant period over eight courses were either created, combined, or revised. In addition, four full-length audio-visual support pieces were started and completed.

The new courses were created to provide a more structured career path for CCLs as well as provide a visible training path that results in better trained participants in all of our courses. New courses developed include:

• An Orientation to the Construction Craft Laborer	8 hours
• General Construction	80 hours
• Foreman Preparedness	40 hours

Courses combined and/or revised include:

• Asphalt Raking	40 hours
• Trench Protection and Principles of Pipe Laying	80 hours
• Concrete Practices and Procedures	80 hours
• Practices and Procedures of Mason Tending	80 hours

Courses that were combined or revised were designed during the original CSTP and revisions varied with the state of the existing course. For example, the Pipe Laying Course was initially developed in two segments. The first addressed pressure piping systems and potable water distribution technology, while the second addressed gravity flow utility systems, such as sanitary sewers and storm drains. These segments initially were designed for presentation in two 40-hour courses. This combination of two courses into one, resulted in reducing the trainee travel costs by 50%. In addition, the new versions add more detail to each section through the reduction of duplicated content.

In addition to the course work, we also developed four videos. Designed to support a specific topic in a course, these videos are extremely detailed and have been used extensively to present complicated techniques and procedures. A good

example is the Pipe Laying Course. This support video (entitled *Gravity Flow Systems: Going With The Flow*) specifically addresses the installation, testing, and repair of over three pipe types for each type of gravity flow utility (sanitary sewer, storm drain, and sub-drain).

In all of the courses and support videos, safety issues were discussed and reinforced. Moreover, as specific occupational hazards unique to a job were discussed, hands-on manipulative training with personal protective clothing and equipment was used to train and reinforce learning.

In accordance with the grant close-out procedure, the products described above have been distributed as instructed.

COST EFFICIENCY AND EFFECTIVENESS VERSUS OTHER MODELS

As mentioned above, in addition to demonstrating regional training, this project proposed to compare the cost efficiency and training effectiveness of the regional training concept against other models.

During the project, we compared three models. The first, a "fixed site concept" (FSC), reimbursed participants a limited amount for travel to the course, as well as provided room and board during the session. The second, labeled "short-term mobile" (STM), traveled a single instructor to a location, as close to the target population as possible, for a short duration classroom based presentation. The last, called "long-term mobile" (LTM), traveled several instructors again to a location close to the target population, but provided full-length hands-on manipulative training.

We found that each model displayed benefits and limitations, benefits and limitations that were directly related to four factors regarding the presentation. Those factors were:

1) Length of course - short-term vs. long-term
2) Type of course - hands-on vs. classroom
3) Instructor experience - on-the-job and/or instructional experience
4) Cost constraints - trainee/instructor and equipment/material costs

The length of course affected each of the models differently. The longer courses required more preparation time and placed additional strain on the instructor(s) that had to travel to the LTM presentations. The shorter model proved easier to coordinate and present, but provided only a small amount of information and instructional time.

The type of course proved to be a crucial factor between the models. For example, without significant preparation and set-up time before the course start date, the LTM model proved expensive and difficult to present. Conversely, the STM presentations proved easy to coordinate and very cost effective as long as the course did not contain significant hands-on training components.

The experience of the instructor impacted the models in an unexpected manner. We learned that a less experienced instructor was capable of providing a good presentation using the FSC where a more experienced instructor(s) was an absolute necessity in the LTM presentations. It is our conclusion that the FSC provided a more structured and replicable program. Elements like tools, equipment, and practice areas were onsite and easier to obtain. Also, the repetitive nature of the course allowed more instruction by rote learning instead of through actual job experience. Thc LTM model, however, absolutely requires a job-experienced instructor. During the LTM presentations, the instructor(s) often are operating away from readily available sources of material and equipment and are forced to improvise quite frequently. In addition, a majority of the hands-on manipulative training exercises were actual small scale construction projects that required skills not only in the area being taught, but also in the cross-functional skills needed to construct something from start to finish.

Cost constraints also impacted the effectiveness of each model. By far the lowest cost per trainee was in presentations using the STM model for courses, such as Craft Orientation (average $109 per trainee). This course only incurred costs for a single instructor's wages, one-day travel expenses, and no equipment/materials. Using the 80-hour Mason Tending presentations as an example, the LTM model proved to be the most expensive, with an average cost of $1,082 per trainee. The higher cost for this model is created by the need to rent classroom space, rent more equipment from local vendors, and purchase all new materials for each presentation. The FSC model averaged $840 per trainee for the same course. The lower costs, again, are due to the fixed site's ability to build up a readily available inventory of equipment and materials, as well as shop for larger quantities and for more competitive prices.

Our conclusions regarding the efficiency and effectiveness of the three tested models are as follows:

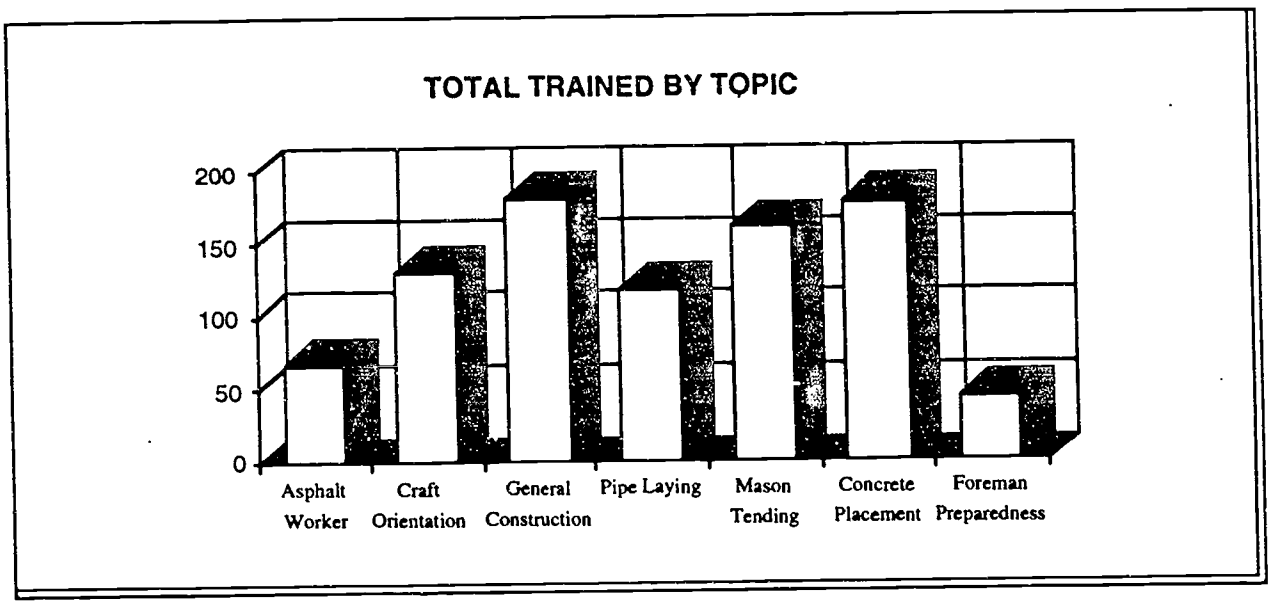
1) For short term classroom presentations, the STM model proved to be the most effective and cost efficient. Topics such as Foreman Preparedness and Craft Orientation fit this category.

2) For longer term construction skills training, the FSC model proved to be the easiest to present, the most cost effective, and generated a structured course that was easily repeated.

3) For longer term construction skills training, the LTM model is not only more expensive, but also required a more skilled instructor. However, the LTM model demonstrated one favorable factor. The quality of the overall training was better because it more effectively simulated the normal stresses and situations encountered on a construction site. These stresses and situations more effectively teach the cross-functional and problem-solving skills that are required of construction workers; thus, better preparing them for the actual job site.

TRAINING PROVIDED

This project sponsored training for 883 CCLs. Although this may sound like a relatively small number of individuals, we are only reporting individuals that actually participated in a class that was subsequently submitted for reimbursement by the regional training provider. If we count all courses provided at the regional training sites, as well as other training sites that utilized the curriculum dissemination during the two and one-half years, over 1,000 CCLs benefited from this project (and still are). The following chart graphically depicts the number of CCLs trained by topic:



As you can see, the General Construction and Concrete Placement Courses trained more CCLs than any other course. This reflects actual industry demand. Although the sites were provided with a recommended training schedule, they were encouraged to modify it and select the courses they needed based on requests from employers and local unions. The option to select the most requested training was necessary to ensure that we were not "training just to be training," but, instead, training for an identifiable need in the industry.

The next statistic deals with the regional training concept and is intended to demonstrate the geographical coverage we were able to obtain with the five regional training sites. Those sites are located in:

- Chino Valley, Arizona
- Des Moines, Iowa
- Livonia, Louisiana
- Corvallis, Oregon
- Mineral Wells, West Virginia

Using a base training count of 1,023 participants, the table below depicts the number of participants trained from each state. As you can see, we were able to provide service to 24 states, including Alaska and Hawaii.

GEOGRAPHICAL COVERAGE									
Arizona		**Iowa**		**Louisiana**		**Oregon**		**W. Virginia**	
AZ	155	IA	145	LA	89	OR	194	WV	106
HI	8	NE	8	MS	122	AK	10	KY	3
NM	2			AL	7	CA	3	MD	3
NV	12			AR	7	HI	6	NY	3
				NY	5	MT	12	OH	11
				OK	2	UT	19	VA	21
				TX	4	WA	66		
Total	177	Total	153	Total	236	Total	310	Total	147

Another facet of our program was our ability to recruit and train a large number of ethnically diverse people. Using a base population of 1,023 individuals, our training participants were 50.7% minorities overall. Of the total, 10.9% were women, 23.0% were African American, 14.3% were Native American, and 2.5% were Hispanic.

Of special note was the recruitment and training efforts conducted at our Regional Training Sites in Oregon and Arizona. Not only did these funds train minorities residing in their own and adjacent states, but also, Alaskan Natives from Juneau to Nome, Native Hawaiians from Oahu, Molokai, and Kauai, and Native Americans from the Navajo Reservation in Window Rock, Arizona.

CAREER PATH CREATION

Although training for CCLs has been in existence for over 25 years, no formal training structure or career path had been designed or implemented. This has become a distinct problem, primarily because of the changing nature of work routinely assigned to CCLs. Another symptom of the technological change in the industry, is an increase in the frequency that laborers are required to make instantaneous decisions that may affect the profit (or loss of profit) for an entire project. This empowerment of front line workers to make project level decisions is an indicator of the high performance nature of the construction industry. It is also an indicator of the skill level required to succeed as a CCL.

In order to advance and certify the skill levels and extend the career options to all craft workers within LIUNA, L-AGC began a long range plan to design and implement a structured training path for the CCL. The first steps were taken by designing and disseminating the formal training sequence that begins with the basics (Craft Orientation and General Construction Courses) and leads to the

increasingly more complex topics, such as contained in the Foreman Preparedness Course.

The next step involved identifying the skills that CCLs have. This lead us to the Dictionary of Occupational Titles (DOT). After researching the occupational and task descriptions in the DOT, we realized that the tasks routinely assigned CCLs are scattered throughout as many as 50 other titles. More importantly, no title existed that adequately addressed the CCL.

With the training path begun, and a new occupational title listed in the DOT, we took another large step to enhance the career path of the CCL. We asked the U.S. Department of Labor, Bureau of Apprenticeship (BAT) whether the CCL is an apprenticeable occupation. Following almost a year of deliberation, the BAT formally approved the CCL occupation as apprenticeable and registered national standards.

CONCLUSION

LIUNA, the AGC, and L-AGC believe the products and progress made during the two and one-half years of this grant period are of crucial importance to the future of the CCLs that participated in this project. Moreover, we believe the accomplishments stretch beyond these almost 900 CCLs to the contractors who employ them, to the project owners that hire the contractors, and eventually to the American Public that pays for the services. In addition, since the process and products were so widely disseminated throughout the laborers training system, the accomplishments of this project will continue to benefit those entities for a long time.

The Laborers-AGC Construction Skills Training Program

Lessons Learned

Cooperative Demonstration Grant
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FOREWORD

National/Regional Training is a concept with great applicability for some industries. If your answers to the following questions are "yes" for your industry, then the National/Regional concept may meet your needs.

- Is work cyclical in terms of seasons of the year?
- Does the industry work with expensive equipment on/with which people need to be trained?
- Is your industry National or at least Regional in scope?
- Does demand for skilled workers vary by job, by skills, over time and from area to area?
- Is training in your industry often fragmented?
- Would you like to reduce administrative costs?
- Does your industry desire a standardized curriculum or demand a uniform skills/knowledge assessment program?
- Is skill standardization a value or a necessity in your industry?
- Is your work particularly susceptible to upswings and downswings in the economy?

This document describes lessons we have learned about how to operate National/Regional Training efficiently and effectively.

Eric Rice
John Tippie
1994

INTRODUCTION

As the Laborers-AGC began considering how to promote Regional Training as a system, we realized that by monitoring our activities, considering our problems and successes, and talking with role incumbents from different levels of the training program, we could generate ideas and suggestions that could inform the thinking and planning of other officials who are considering, planning, or implementing Regional Training. This "Lessons Learned" document is a distillation of our experience with National Regional Training. Data was collected by attending Advisory Committee Meetings; observing activity; reading minutes, memos, publicity, and directives; and discussing situations and other factors. The data was collected throughout the project, but was analyzed at project conclusion.

OVERVIEW

The report is organized in broad terms of advantages, disadvantages, and cautions/recommendations. Within the advantages and disadvantages categories, lessons are drawn that inform future planning of National/Regional Training. The cautions/recommendations section suggests proactive procedures that a training program should implement as strategies for creating effective training. The strategies are listed as guidelines to follow.

ADVANTAGES OF NATIONAL/REGIONAL TRAINING

Advantages of National/Regional Training are couched as efficiencies of activity. Specifically, efficiency advantages occur in areas such as (1) managing training activity, (2) purchasing, and (3) matching training to the needs of the industry. For example, in terms of training management efficiencies, National/Regional Training dramatically improved the capacity to develop and present a standardized curriculum, to schedule training to avoid duplication, to keep records, and to promote training opportunities and the system. Each efficiency is discussed briefly in the following narrative.

Training Management Efficiencies

As noted, training management efficiencies were identified in areas such as developing and using a standardized curriculum for certain courses, scheduling training, keeping records, and promoting training and the system. The standardized curriculum not only allowed efficiencies in the development of the materials, but also permitted effectiveness in the creation of tests, and in instructor/trainer training. The National/Regional concept facilitated consolidation of production of instructional materials, avoided duplication of effort, and allowed consolidation of video production (and equipment) and desk-top published text materials. It also allowed for consolidation of activity to design tests and for contribution of instructor training.

National/Regional test development encourages standardized curriculum and allows for a much larger pool of trainees to ensure validity and reliability. It also saves money by spreading the expensive costs of test development.

National/Regional Training also facilitates instructor training. It allows a single program for all instructors which saves expense. Equally important, it ensures that all instructors are trained the same way and thus encourages the standardization of curriculum to trainees throughout the system.

The standardization of curriculum ensures a uniformity of content, skills, and knowledge across the United States. The uniformity more likely guarantees the "product" of training in terms of the skills and knowledge an employer can expect a laborer to bring to the job.

The standardization of curriculum, together with the National instructor training for our teachers, also improves our capacity to estimate and budget time and supply requirements for training. This process simplifies the budgeting process and facilitates the planning/delivery of courses across the country.

National/Regional Training also realizes training management efficiencies in scheduling. The National Coordinator, working with local training fund administrators, was able to create a single, yearly, master schedule for courses provided through the National/Regional Program. The consolidated master schedule allowed three important outcomes: (1) it eliminated duplicate courses taught at Regional centers at the same time (or even close to the same time period) (2) it allowed for spreading courses across sites and time so as to allow for enough coverage to meet demand, (3) it permitted the creation of a master schedule that was used with local union officials, training fund directors, and employers to promote the training and to plan for their skilled labor needs; and, (4) an important consequence of the master schedule was that by involving the Regional sites in discussion and planning of this product, it helped them feel ownership of the program.

Efficiencies also were noted in keeping records. Laborers/AGC worked to create an automated data base that could serve as a central record repository. Regional sites are tied into the system by computer. Individual training and skill records can be maintained long-term and up-dated, as necessary. Eventually, the record-keeping system should be able to be cross-referenced with other national and regional data systems such as health and pension to allow for performing institutional studies that can improve system performance.

Promotion also is accomplished efficiently at the National/Regional level. Materials for the entire system can be produced economically and distributed through the system. Likewise, because National/Regional Training establishes National and Regional "points-of-contact" to where inquiries are addressed, schedules and promotional information can be mailed promptly upon request. Likewise, the points-of-contact can perform proactively, interacting with the media, educational institutions, employer organizations, governmental agencies, and other groups and individuals who may be interested in National/Regional Training. The points-of-contact also made presentations at national trade and professional meetings as well as meetings within the system.

Other promotional activities such as the production of brochures and videos also benefited from the consolidation of resources/equipment and the subsequent distribution of standardized promotional materials.

PURCHASING

A second area of advantage for National/Regional Training is improved purchasing capacity. Equipment, supplies, training aids, and other materials can be purchased in larger quantities, thereby guaranteeing a less expensive per unit price through the power of numbers generated by the National/Regional Training. For example, giving a potential level of volume, computer hardware and software was made available to Regional centers

at dramatically reduced costs. Further, in addition to achieving cost savings, the bulk purchase agreements also ensures uniformity of materials, hardware, software, and so forth used in the system . . . and uniformity has its own managerial efficiencies.

Group purchases also facilitate budgeting by producing realistic numbers and predictable expenditures.

The non-duplication of training also has major implications for purchasing efficiencies. By concentrating resources allowed by National/Regional Training, it is possible to purchase one (or limited numbers of) very expensive priced equipment or supplies -- such as tunneling, drilling, and blasting equipment and supplies, for example -- and to locate the expensive materials at only a couple of sites to which all trainees come. Thus, the cost of equipment is saved, and the expensive equipment; therefore, stays in use almost continuously since all the training from the entire system occurs only at those sites.

MATCHING TRAINING TO NEED

One of the greatest advantages of National/Regional Training is improving the capacity of the industry to better match labor skills supply and demand. By estimating need on a regional basis, and then providing training slots regionally to meet that need, the system avoids training for jobs that do not exist, while ensuring an adequate supply of skilled labor for employers. Further, if shortages occur, other Regional centers or the mobile unit can make up the differences. And Regional Training has distinct advantages when training for very large jobs by facilitating estimations of available trained labor at any given point in time. Likewise, the auxiliary mobile training option allows short term or "emergency" training at a specific site to meet a specific need.

DISADVANTAGES OF NATIONAL/REGIONAL TRAINING

National/Regional Training is not without limitations; it has disadvantages that must be considered and dealt with. The two major disadvantages are (1) the cost of maintaining residential facilities and (2) the loss of local autonomy and ownership.

Local Autonomy

The loss of local autonomy and "ownership" is as much psychological as real; however, it is still a factor and a disadvantage of National/Regional Training. Some areas and some industries, especially those with a history of local training and collectively bargained support, may feel especially threatened, alienated, or disenfranchised by establishing regional rather than local training. Typically, for all education and training in America, governance is local. Regional training means "others" also participate in making training decisions; further, the needs of the region, not just the isolated and individual local area, must be served. In addition, to the extent the cost of training is paid for/supported by local monies (collectively bargained contributions, taxes, employer contributions), the local monies are pooled with dollars from other areas to support the program of the entire Region. Thus, the direct and unilateral control of the budget line is lost to the local area.

So too, priorities must be negotiated, and the priorities of single areas weighed against the costs and priorities of the entire region. Therefore, local areas do not always get their wishes met.

Often, local training programs show greatest support for and feel greatest ownership of a training program when they own and operate their own, local training facility. Regional training is not conducive to this type of ownership. Therefore, other strategies must be exercised to build a sense of ownership for the program.

Costs

A second disadvantage of National/Regional Training is the cost associated with maintaining and operating regional, residential training facilities. Such facilities include sleeping quarters, kitchen facilities, classrooms, office space, storage, hands-on training areas, and common areas, at a minimum. . . and most of these costs are above the other direct costs of training. Further, not only are there capital expenditures involved in building costs, but also there are salaries, benefits and personnel issues involved with the staff that is required to maintain and operate the residential and often year-around facility.

Complicating the capital costs is the cost of maintaining the facility while it is not in use. When recessions/depressions affect the industry or Region, training tends to be restricted or reduced. Facilities and expensive equipment occasionally sit idle even though the cost of operating/maintaining the facility continues. While regional training serves a larger population and is less susceptible to local downswings/stagnation in the building economy, the facility still can become idle if there is no demand for skilled workers.

CAUTIONS AND RECOMMENDATIONS

In addition to the advantages and disadvantages, the past several years have indicated clearly that there are cautions, positions, and actions that, if followed, can contribute substantially to the viability of National/Regional Training. Lessons, expressed here as guidelines, are suggested in the following topics: (1) costs; (2) promotion/planning and (3) policy.

Control Costs

Costs and budgets remain a continuing concern to all training. While National/Regional Training reduces costs within the entire system by eliminating duplication and limiting the purchase of expensive equipment, the system retains costs. Nevertheless, several strategies can be used to contain costs. These include at least the following:

- Designate specific sites to perform training that has high cost-per-slot in order to avoid unnecessary expenditures; in addition, keep the available slots that use the expensive equipment fully occupied.
- "Rent" the training site or provide alternative training during recessions or during "down-time" in the schedule.
- Operate some functions of the training center such as food and laundry on "contract" basis to contain costs, especially when the services are not needed.
- Arrange bulk purchases across sites.

- Use mobile or satellite capacity to take training to a specific site to respond quickly to "emergency" or short-term demands.

Promotion and Planning

Promotion and planning are critical to the success of the National/Regional concept in several ways. Promotion to employers, local unions, members, educational institutions, government agencies, and community organizations builds a constituency and demand for training. Brochures, videos, open houses, presentations, and newspaper and magazine articles are effective promotional strategies. Holding employer and union meetings at the training site while training is on-going is even more effective because it allows visitors to see training and to talk with trainees. Likewise, public service projects provide "live-work" experience in training and call very favorable attention to the training program.

Cooperative planning also is an important strategy for National/Regional Training. By involving organizations from throughout the region, you build ownership and interest. Further, it often is possible to diffuse potential problems either by hearing them out or responding to a concern before it becomes a problem.

In general, the guidelines for promoting National/Regional Training associated with promotion and planning would at least include the following:

- Use a variety of means to publicize training. Identify your entire range of possible audiences and what each audience would like to know about training. Then design and produce at least one promotional piece for each audience.

- Use a variety of promotional techniques for all different reading levels, attention levels, and information sources. Include print, visual, and audio promotional pieces in the mix.

- Remember that image and notice are critical. The product must look good and appear in places where the information will be noticed.

- Use necessary tasks as promotional activities. For example, one can promote training by involving various employers and organizations in discussing the need for trained labor. Similarly, as training officials participate in community activities such as civic organizations, charity projects, and public service/community tasks, these also become opportunities to promote the program in unobtrusive ways.

- Plan programs, schedules, and budgets on at least a yearly basis.

- Designate sites as specialty training sites and use these in promotional activities. In that way, sites come to build an identity and a constituency.

Policy

Policy and managerial behavior are critical to making National/Regional Training succeed. Among the factors that have been demonstrated as important are the following:

- Designate and maintain "points-of-contact" for information for the program.
- Establish clear rules for all sites on issues such as budgeting, recruitment, record-keeping, and so forth.
- Involve participants from training providers/funds on committees to make decisions about the entire system . . . and talk with them regularly.
- Systematically canvas training providers and other stakeholders about needs and use data in planning.
- As coordinator, always serve as an honest broker to resolve issues and solve problems.
- Respond quickly to emergency demands for training from the field.
- Coordinate schedules, but use local needs and data as the basis.
- Provide technical assistance and material promptly upon request.

The Laborers-AGC Construction Skills Training Program

Independent Evaluator Report

Cooperative Demonstration Program
#V199C10007

by

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Table of Contents

INTRODUCTION

This report reviews the activities and accomplishments of the Regional Demonstration Project for the Construction Laborer Craft Training Program conducted by Laborers-AGC Education and Training Fund under cooperative demonstration grant #V199C10007 from the U.S. Department of Education. The initial period of the grant ran 18 months from January 1, 1992 through June 30, 1993. Two no-cost extensions subsequently were approved to permit the program to operate an additional twelve months in order to extend the school-to-work and performance testing tasks on the grant, to continue work on developing the career path initiative, and to offer additional training opportunities. Thus in total the project operated for two and one-half years.

The Laborers AGC Education and Training Fund is a national organization dedicated to training and education of construction laborers. It is jointly sponsored by the Laborers International Union of North America (LIUNA) and the Associated General Contractors (AGC). Among LIUNA's half million members, about 350,000 work in construction. Of these, 300,000 are in the U.S. and 50,000 are in Canada.

The project targeted six key objectives:

1. Test the cost efficiency and effectiveness of regional training as a model against other variations.
2. Advance and certify skill levels and extend career options to all craft workers and trainees within Laborers-AGC.
3. Produce adequate numbers of skilled craft workers to meet growing industry demand.
4. Expand yearly hours worked by the membership.
5. Generate interest, commitment, and operation of regional training in other Laborers-AGC sites and industries.
6. Develop new pubic/private sector relationships that will assist laborers in the industry to pursue higher educational activities.

The project did not merely aim to train workers in discrete skill areas. Rather, it was part of a broader vision to develop a career path for construction laborers linked to education, including opportunities for higher education. The broader vision was outlined in the *Strategic Plan for Laborers' Training* adopted at the national education and training conference in August 1992. This project intended to advance portions of that agenda.

As of 1992, seventy regional and local training funds were voluntarily affiliated the Laborers AGC Education and Training Fund, contributing one cent per hour worked to the national fund. Contribution rates to local funds ranged from 1 to 3 cents to $1.35 per hour worked; the hourly contribution rate averaged 19 cents.

These industry contributions provided the core funding for the joint training operations of the Laborers-Associated General Contractors.

Thirty-nine of the seventy funds owned training facilities in 1992. At least twenty-two of the training centers operated residential centers with facilities for living, training, and recreation. Locations without residential facilities either served commuters only or arranged for trainees to stay in local motels. Nine of the twenty-two residential training Centers had been designated as regional training providers under the Construction Skills Training Program (CSTP).

Laborers-AGC proposed to build the project based on its successful existing regional training model, the Construction Skills Training Program. The Construction Skills Training Program was designed to offer standardized, comprehensive initial training courses to construction laborers so that they could be productive from the first day on the job. The courses also strongly emphasized safety. First pilot tested during the last quarter of 1990, CSTP utilized eight Laborers-AGC affiliate training sites to provide training for laborers throughout the United States for one-week training programs offered in three skill areas (Basic Mason Tending, Basic Concrete, and Basic Pipelaying). The three-month pilot test resulted in 41 presentations to 331 laborers who received a total of 13,000 contact hours of intensive hands-on training.

One-week courses in advanced mason tending and advanced pipe laying had also been developed and were being delivered on an intermittent schedule at various sites.

Curriculum Improvements

Through the Cooperative Demonstration Grant, several improvements in curriculum were made, especially in organizing and sequencing courses and in upgrading the course contents. The basic and advanced modules in mason tending and pipe laying were improved and combined into eighty-hour courses. A second week of training was developed and added to the concrete course. The 40-hour course for asphalt workers was improved.

As a gateway to these trade-specific skill courses, a new 80-hour course in General Construction Skills was developed. The initial 8-hour segment of the General Construction Skills Course, a module entitled Craft Orientation, provides an introduction to the construction industry, an overview of the wide variety of work a construction craft laborer performs, and a briefing on the Laborers International Union of North America and the Laborer-AGC Education and Training Fund. Craft Orientation is the first day of the General Construction Skills Course; but it was designed so that it also could be presented on a stand-alone basis to students and other interested potential applicants. The Craft Orientation materials are modularized so that they can be presented in a 1-hour, 2-hour, or 4-hour versions thus accommodating to the time that schools make available.

Finally, a new 40-hour course in Foreman Preparedness was developed and delivered.

The courses were organized into four levels as follows:

Level I	Industry Introduction	Craft Orientation
Level II	Beginning and refreshing skills	General Construction Skills
Level III	Construction Skills	Asphalt Concrete Mason Tending Pipe Laying
Level IV	Supervisory Skills	Foreman Training

At this point, this sequencing structure is more of a conceptual ideal toward which the industry is heading than it is universal practice. In part, this is due to the fact that the courses are offered only on an intermittent basis. Policies are coming into place in many areas of the country to support this structure. In Oregon, for example, the general policy is that all new entrants are strongly recommended to take the General Construction Skills course and all apprentices are required to take it. However, not everyone comes into the union through apprenticeship and a few exceptions are made to the course requirement. Of note also, the collective bargaining agreement in Oregon provides any individual who successfully completes the Foreman Preparedness course a raise amounting to 35 cents per hour. Still, the sequence is being presented as a partial career path of work and training for laborers.

The new-format Construction Skills courses were advertised to the membership through brochures and newsletter articles. Some of the centers also conducted telephone solicitations with local affiliates to fill some of the classes. The courses were open to anyone who wanted to apply on a first-come, first-served basis. Applicants were sponsored by their local union business manager who confirmed the need for the particular skill in the local labor market. This procedure was considered part of the check to assure that the training met genuine labor market needs.

No training stipends were available. Each trainee received free room and board and a travel allowance according to a schedule which varied by the distance traveled:

0-50 miles	$30
51-100 miles	$60
101-150 miles	$90
150 miles or more	$120

In addition, The amount covered transportation both to and from the training site.

While the General Construction Course was targeted primarily at new entrants to the industry, because it was labeled a refresher course, it also was available to experienced workers. Likewise, experienced workers could take any of the construction skills courses without first taking General Construction Skills. As a result, although the courses were sequenced into levels, in practice each attracted a broad mix of workers in terms of their experience in construction work.

Site Selection

The original Construction Skills Training Program was offered on a regional basis in ten residential training centers across the U.S. so that it could be made available to workers in areas without a training program or where the existing programs were not sufficiently funded.

Five of the 10 regional training sites were selected to pilot the training proposed in this project with the U.S. Department of Education. These included Chino Valley, Arizona; Des Moines, Iowa; Livonia, Louisiana; Corvallis, Oregon, and Mineral Wells, West Virginia. They were selected according to several basic criteria: (1) they were distributed across the four regions of the U.S. in which Laborers-AGC is organized; (2) they offered variety in terms of demographic characteristics and other factors; (3) the leadership and staff of these training centers were interested in operating the demonstration project; and (4) the centers were capable of conducting the demonstration and filling the classes offered.

As illustrated in the chart on the following page, through the five chosen training centers, the program was to be made available to construction laborers in 25 states and the District of Columbia as initially proposed. As one might reasonably anticipate, most of the trainees came for the states in which the training centers were located. In fact, two-thirds of the trainees came from states in which the centers were located. Only the Louisiana site served more workers from another state (Mississippi) than its own. Eight states and the District of Columbia originally depicted as part of the regions to be served did not provide any trainees, however, states not originally listed (shown in parenthesis) did send workers. Often these were cases in which individuals wanted some specialty training for upcoming work in their area.

In all, the five training centers provided training to workers from a total of 23 states. including Alaska and Hawaii. Therefore, they did serve as regional training centers although not precisely as anticipated in the proposal.

Geographic Areas Served Through the Project		
Training Site	**States to be Served**	**Actually Served**
Chino Valley, Arizona	Arizona	155
	Colorado	0
	Nevada	12
	New Mexico	2
	(Hawaii)	2
	TOTAL	177
Des Moines, Iowa (mobile)	Iowa	145
	South Dakota	0
	Nebraska	8
	TOTAL	153
Livonia, Louisiana	Louisiana	89
	Alabama	7
	Arkansas	7
	Kentucky	0
	Mississippi	122
	Oklahoma	2
	Tennessee	0
	Texas	4
	(New York)	5
	TOTAL	236
Corvallis, Oregon	Oregon	194
	Alaska	10
	Hawaii	6
	Idaho	0
	Utah	19
	Washington	66
	(Montana)	12
	Wyoming	0
	TOTAL	310
Mineral Wells, West Virginia	West Virginia	106
	Maryland	3
	North Carolina	0
	Virginia	21
	Washington, D.C	0
	(Kentucky)	3
	(Ohio)	11
	(New York)	3
	TOTAL	147

GOALS OF THE PROJECT

Test the Regional Training Model

All of the participating training centers except Iowa had residential facilities. In Iowa, the instructor travels to the class, in a training approach that Laborers-AGC staff call the "mobile regional training model." Under this model, training is set up at various urban locations across the state in facilities hosted by a non-profit agency, such as a school district or a park authority. The classroom portion of the training is conducted in a rented hotel room, if classroom facilities are not otherwise available. As thanks for assisting with the training, the trainees usually construct a building or other permanent structure for their hosts as part of the training.

The mobile model places a considerable burden on the instructor, who must make arrangements at the distant facility, including assembling rented or loaned equipment and supplies, planning and executing the building project to be constructed. Often the site has to be prepared to bring it to a stage where it is suitable for training in the craft to be offered. An instructor has to be highly organized to accomplish all these effectively as well as have a good local support network. Contacts with major local contractors can be helpful in securing equipment. The instructor must also have the ability to adjust and improvise in response to changing conditions. One advantage of this training model is that it simulates the conditions on real construction jobs better than does fixed site training.

Assessment of the Regional Training Model. As it turns out, fixed-site training and mobile training are largely complementary rather than substitutes. Much depends on the characteristics of the course to be offered. Courses that are classroom-based, short term, and involve little equipment (such as craft orientation, foreman preparedness, or the asbestos abatement refresher course) are often most efficiently arranged by having the instructor travel to the intended trainees. In practice, all the residential sites conducted some short-term training on a mobile basis by sending their instructors on the road occasionally.

Courses that involve a lot of equipment for hands-on training (such as general construction skills, pipe laying, mason tending, or concrete technology) are most easily conducted at a fixed site. However, the Iowa experience demonstrated that even such courses can be conducted on a mobile basis at comparable costs with a highly experienced instructor.

Produce adequate numbers of skilled craft workers to meet growing industry demand

The project aimed to help build a training system that could produce adequate numbers of craft workers to meet growing industry demand. The project paid for a total of 883 laborers to receive training at the five regional centers. This number amounted to only an estimated one percent of replacement demand for laborers, let alone any new demand. But the Department of Education Construction Skills grant provided the pilot training to implement innovations in Laborers-AGC network of training funds which nationally during 1993 conducted a total of 3,610 courses for 41,287 trainees at an average of 37 contact hours per trainee. In a real sense, the Department of Education grant aimed to influence and improve the broader system.

Training Conducted by Location

Location	Sessions		Trainees
	Scheduled	Conducted	
Arizona (Chino Valley)	14	17	245
Iowa (Des Moines)	8	5	70
Louisiana (Livonia)	14	15	218
Oregon (Corvallis)	9	17	213
West Virginia (Mineral Wells)	14	13	137
Totals	59	67	883

Training by Subject. Among the 883 trainees who completed classes funded through the grant, the largest number took classes in General Construction, Concrete, or Mason Tending. Semi-annually, the national Laborers-AGC compiled and published a schedule of upcoming Construction Skills Training programs. Numerous changes in this schedule were made. Training site directors were urged to cancel classes if anticipated enrollments were low and they were encouraged to add courses based on requests from employers and local unions.

Training by Subject

Type of Training	Sessions: Initially Scheduled	Sessions: Actually Conducted	Trainees
Craft Orientation	10	9	131
General Construction	10	12	182
Asphalt Worker	6	7	68
Concrete Worker	8	13	179
Mason Tending	12	12	161
Pipe Laying	8	9	118
Foreman Preparedness	5	4	44
Totals	59	67	883

Due to the seasonal nature of construction labor markets, training is best scheduled during slow periods of work. Fall and Spring are best. Winter weather can present significant problems for the hands-on portions of the training which is mostly conducted outside. Summer must be avoided because workers are generally busy. Since construction work is seasonal, Laborers-AGC Education and Training Fund chooses to avoid scheduling classes during work periods in ways that would effectively penalize economically those who decide to participate in the training.

Decisions about the format of the training schedule were left to local site staff. Some centers operate on a conventional 40-hour week training schedule. The most common training schedule, however, was to offer a 80-hour course during eight consecutive 10-hour days. Many centers found this compressed schedule to be most cost effective because it minimizes expenses for travel and lodging. It also eliminated the risk that trainees would go home for the weekend and fail to return during the following week. Additionally, it was preferred by their trainees, and it approximated the laborer's work schedule characteristic during hectic summer periods of construction activity.

Expand Annual Hours Worked by the Membership

One might expect that the areas most active in sending members to training would tend to be the areas in which hours worked by the membership most increased. One could logically argue that good employment prospects boosted the demand for training, or conversely, the training produced workers who were employed more intensively. However, only in the West Virginia District Council and in Louisiana did the annual hours worked by the membership rise over the course of the project from 1991 to 1993. Even in West Virginia and Louisiana, the pattern was not consistent throughout the period of the grant; total annual hours worked dipped in 1992 in both states. From 1992 to 1993, the total hours worked reported in Arizona took a sharp decline of 37 percent after rising 6 percent the previous year. Clearly numerous factors beyond training influence the total hours worked by the membership, including spending levels on public works, interest rates, and state of the economy.

Annual Hours Worked by Membership

Training Fund	1991	1992	1993
Arizona	1,453,259	1,541,691	975,206
Iowa	1,986,374	1,937,129	1,818,545
Louisiana	2,461,600	3,098,334	2,717,594
Oregon	4,201,313	3,394,413	3,229,406
West Virginia	2,184,184	2,081,587	2,448,412

Develop New Public/Private Partnerships and Linkages to Education

Two types of linkages to education were pursued through the project: (1) a school-to-work linkage effort to place new high school graduates into training and jobs, and (2) work-to-school initiatives to encourage incumbent workers to continue their education. A key part of this latter endeavor includes linkages with colleges to allow members to obtain college credit and advance their education.

School-to-work linkage—After much discussion with affiliates about establishing national formal school-to-work programs, it was determined that school-to-work initiatives were best developed on a local basis rather than a national basis because American education is organized on a state and local basis. Laborers-AGC decided to establish a school-to-work pilot project in West Virginia due to the good relationship with the project's advisory board member, Dr. Alan Sponaugle, Director of the West Virginia Department of Vocational Education.

The West Virginia School-to-Work Pilot Experience—Discussions were held with Dr. Sponaugle at the Advisory Board Meeting held in West Virginia in March 1993. Sponaugle recommended a meeting of the state's 20 vocational technical centers directors. Subsequently, the Laborers-AGC arranged a meeting in late May of 1993, but only three or four center directors (out of 20 statewide) attended. One brought his guidance counselor.

A design for the program was developed. West Virginia state officials determined that state laws prohibiting youths under age 18 from working in hazardous occupations also applied to the Laborers-AGC training because so much of it is "hands on" training. Given this interpretation, it was decided to connect with high school seniors and place them into training upon high school graduation when they would be 18 years old. In the design of the school-to-work pilot, Laborers-AGC decided to use a three-part approach, making use of the curriculum that had been developed through the project. First, West Virginia Laborers Training Center director Terry O' Sullivan was to make a 30-to-45 minute presentation in a West Virginia Vocational-Technical Center to explain the trade of laborer and to recruit interested students. Students who expressed interest then would be invited to a 8-hour Craft Orientation session held at the Training Center in Mineral Wells on a Saturday during the Spring semester of their senior year. At the end of this session, the training center director and instructional staff would conduct screening interviews with individual students. Those selected would be invited the participate in the 80-hour course on General Construction Skills, held shortly after their graduation from high school. They would then be referred to work at an initial trainee wage about 60 percent of journeyman rate (in the range of $7 to $8 per hour). This rate would increase in 10 percent increments at 400 hour intervals so that at the end of a year's work, they would be at full journeyman rates. Several school officials expressed considerable interest in this wage rate because many of their graduates were being placed at minimum wage.

After some deliberation, the vocational-technical center serving Rhoan-Jackson counties was chosen as the pilot site. It was conveniently located about a half hour from the Mineral Wells Training Center and between two union locals, each with a favorable employment outlook. This was important because Laborers-AGC wanted to have immediate employment prospects available for the youths.

The plan was never implemented, nor was the initial presentation was made at the school. Several factors intervened and postponed the effort. Perhaps most important was the discovery of a perverse incentive in the initiative. The Laborers had no registered apprenticeship or trainee program in West Virginia. Under terms of the Davis Bacon law, full journeyman rates must be paid to workers on all federally financed work except official apprentices and trainees. Seventy percent of the construction work performed by Laborers in West Virginia is federally funded and thus is covered by the Davis Bacon Act. Thus the new recruits with their lower training wage were effectively limited to working in the private market. But even

this could have adverse effects because the lower rates paid in the private market over time would reduce the average journeyman wage rates reported under the Davis Bacon wage survey. Thus the school-to-work pilot had the potential to adversely affect the wages levels that incumbent workers could command on federal work across West Virginia.

In Spring 1993 at the national level, following up on the recommendations of the Career Path Committee in their January meeting, Laborers-AGC began a campaign to establish an apprenticeship program registered with the Bureau of Apprenticeship and Training, the U.S. Department of Labor. West Virginia staff decided to await the outcome of this national effort before proceeding further. National apprenticeship standards for the occupation of Construction Craft Laborer were finally approved by the Bureau of Apprenticeship and Training on July 6, 1994 after the end of the project.

A second adverse factor was the timing. Beginning in the middle of the Spring semester 1993, little time remained to act before school was out. With these complicating developments, the West Virginia school-to-work pilot was postponed. Oscar Harris, the director of the Rhoan-Jackson Vocational Technical Center, was told to wait until the laborers had better clarification on the apprenticeship issue.

Due to the concerns about apprenticeship and the complications of the Davis-Bacon Act, when West Virginia Training Center Director Terry O'Sullivan resigned in July 1993 to take another job, no clear assignment was handed off the new director.

From the experience to date in West Virginia and other places, considerable effort will have to be exerted for the Laborers to put an effective school-to-work program in place. Establishing an apprenticeship program and building career ladder will help establish the profession and help make it attractive. But there are significant image problems to overcome as well. In recruiting youths to their trade, laborers are handicapped by the fact that the occupation of construction labor is either neglected or misrepresented in most conventional career guidance literature.

Work-to-School Linkages—For the Laborers-AGC, work-to-school linkages represent a natural extension beyond their existing efforts to promote literacy among their membership. Laborers-AGC remains concerned about the literacy skills of its members, since an estimated 30-35 percent of the LIUNA members either have not completed the eighth grade or are recent immigrants to the United States.

Laborers-AGC have addressed the literacy issue in three ways. First, beginning in 1989, the Laborers-AGC initiated the Learn-At-Home Program. The program uses commercially produced video tapes and workbooks that teach reading skills. The tapes, developed by public television, focus on beginning reading skills through GED reading. The Laborers-AGC rents the tapes, for four months per rental, to members who request them. The Program is promoted through the Laborer

Magazine, the Laborers-AGC Newsletter, announcements and newsletters produced by local training funds, and presentations by trainers and business agents/managers. Through summer 1994, over 3,800 laborers have used to program, 30 percent of whom have requested at least one additional tape. Suggestions for improvements include expanding this lending library to include math, measurement, science, writing, regulations, and more adult-focused and trade-specific reading.

Second, Laborers-AGC have addressed literacy through developing and offering Prep courses. These courses, designed initially with U.S. Department of Education funds, enable laborers to master literacy skills necessary to succeed in continuing trade training. For example, the Environmental Prep course teaches information searching skills, vocabulary, and reading for the main idea so a participants improve their chances to succeed in the more advanced environmental courses and passing the required competency examinations. Similarly, the English-as-a-second language courses teach basic terms and skills necessary to succeed in hands-on trade training as well as effectively extending the time in training.

A third way the Laborers-AGC addresses literacy is to continue to seek outside funding to expand its library of literacy-related skills and courses. This effort is critical, given the advanced skill levels required for some of the work laborers do in today's workplace.

A general aim of this initiative is to facilitate options to pursue further education and training by linking training with college. The initiative has proceeded on several fronts. Three separate approaches were sought to obtain college credit for the training provided by Laborers-AGC. First, Laborers-AGC prepared and submitted materials on some of its courses to ACE/PONSI for a recommendation on college credit for laborer training. Secondly, negotiations with Lane Community College in Eugene, Oregon established a program to package college credits for Laborers- AGC Construction Skills courses on a standardized basis leading to a one-year certificate or two-year associates degree. Third, negotiations with Edison State College connected Laborers-AGC training with both two-year and four-year college degrees.

Application to ACE/PONSI for recommendations on college credit. Through its Center for Adult Learning and Educational Credentials, the American Council on Education (ACE) in Washington, D.C., has established the Program on Non collegiate Sponsored Instruction (PONSI). PONSI makes college credit recommendations for formal courses sponsored by organizations that are non-degree granting, such as business and industry, government agencies, and labor organizations. To qualify, course length must be over 20 hours, course material must be of college level, instructors must be qualified, and a student assessment system and a record maintenance systems must be in place and operational.

Laborers-AGC project staff applied to the Program on Non-Collegiate Sponsored Instruction (PONSI), requesting college credit for participation in training sponsored by Laborers-AGC. The initial application was made with the environmental courses because they contained the most technical information and thus offered the strongest case for college credit. The PONSI response was positive; it agreed to recommend college credit for the following courses:

Course	College Credit Recommended
Hazardous Waste Worker Course	3 credit hours
Hazardous Waste Operations Course	2 credit hours
Remediation Worker Course	1 credit hour
Hazardous Waste/Department of Energy Worker Course	3 credit hours
Asbestos Worker	2 credit hours
Lead worker	2 credit hours

The recommendations were published in the *National Guide to Educational Credit for Training Programs* and distributed to colleges and universities for their use in granting academic credit. In effect, the recommendations will allow persons who have taken any of these courses at a Laborers-AGC regional training center within the last six years the opportunity to apply for credit at the academic institution of their choice.

Linkage to Lane Community College. With Advisory Board member Carl Horstrup, Department Chairman, Industrial Technology Program, Lane Community College, Laborers-AGC negotiated an arrangement in which laborers could obtain a one-year Certificate in Construction Technology by assembling a program that included a combination of courses taken at their local community college, selected correspondence courses from Lane Community college, and an arrangement for credit by assessment for their Laborers-AGC courses. Specifically, the program requires successful completion of four 80-hour Construction Skills courses (e.g., General Construction, Concrete, Mason Tending, and Pipelaying), 17 units of correspondence courses at Lane Community College (including Blue Print Reading I and II, Construction Codes, Construction Estimating, Industrial Safety, either Basic House Wiring or Basic Plumbing, and Solar Energy Systems), and courses in English, Occupational Mathematics, and Communications taken at their local community college and transferred to Lane Community College. The cost to the individual for this certification is the tuition and fees for the local community college courses plus $25 per credit for the correspondence courses taken at Lane Community College (or a total of $425 for the 17 units).

Linkage to Thomas Edison State College. Laborers-AGC initiated contacts with Thomas Edison State College as a strategy in its effort to develop a comprehensive career path of work and training opportunities for members. Just as the Lane College option provides opportunities for a two-year degree, the Edison State option opens opportunities to obtain a four-year degree. The aim was to find an accredited four-year institution that (a) accepts and records ACE/PONSI credits; (b) offers additional course work in a variety of subjects and majors; and (c) has non-restrictive residency requirements so that working adults can attend. Thomas Edison State meets all of these criteria. Therefore, the Laborers-AGC worked out an arrangement that enables laborers who wish to pursue a degree in higher education to do so. Efforts continue to add other institutions to the agreement and to arrange for other types of cooperation such as matriculation in professional schools, including engineering colleges and advanced degrees in teaching and/or administration.

Advance and Certify Skill Levels and Extend Career Options

Performance Rating System and Skill Certification. There is widespread support for the concept of performance testing in the laborers' among instructors, trainees, and employers. Instructors feel that their training will carry more influence with contractors under a system of performance testing. One instructor predicted that the introduction of performance testing will be a big step in boosting the quality of training offered through Laborers-AGC.

Under the certificates of completion currently offered, contractors cannot be certain of skill level of those who complete training. As one contractor explained his concerns: "I send two individuals to training, one goofs off and the other works hard and learns a lot. Yet they both receive the same credential—a certificate of completion. How can I distinguish the two?"

Many of the trainees look forward to being able to certify their skills through performance testing. They advocate for performance testing because they believe it will increase the value of their credentials.

In some measure, the support for testing and skill certification derive from the favorable results that laborers have experienced in environmental work. The training in hazardous waste cleanup, asbestos abatement, and lead abatement all require trainees to pass a multiple choice test demonstrating their knowledge at the end of the course. Passing the test is necessary to obtain certification to conduct the work. In addition, certification must be renewed each year by attending an 8-hour course and passing an exam. Workers cannot be employed on a job site without a card documenting their active certification. Thus many laborers in environmental work naturally attribute their ability to obtain and keep employment directly to their certification.

It should be noted that there are differences between performance testing and the testing is commonly used in environmental work. In the environmental field, multiple choice questions often are designated by state licensing agencies and are not performance based. Sometimes the questions are not even relevant to laborers' work.

In construction, no counterpart certificate exists. Some affiliate funds have implemented hands-on skill dem. nstration requirements for construction skills in the past, but national Laborers-AGC has not yet developed formal criteria for these tests.

Laborers-AGC also builds into its courses certification from other groups. Examples include CPR and First Aid Certificates from the Red Cross or Coyne acquired in the General Construction Skills course. Such certifications are especially valued by contractors who must have first aid and/or CPR certified personnel on their job sites according to OSHA regulations. Another example is certification to operate powder-activated tools such as the Ramset™ D-60 and the Hilti™ DX 36M which are used to secure various fasteners to base materials such as steel or concrete. As part of the Mason Tending course participants obtain a certificate in Rough Terrain Forklift Safety and Maintenance from the Mason Contractors Association of America.

In concrete technology, the Laborers-AGC joined with the American Concrete Institute (ACI), to upgrade their instructional staff to Examiners and issue Concrete Flatwork Craftsman Certifications. As part of the Cooperative Demonstration Grant, four instructors were certified as Examiner. Laborers-AGC developed and piloted criteria for performance tests in concrete placement and finishing. Fifteen laborers were certified as concrete flatwork finishers during the development and pilot of the test.

Through the grant, the project staff accumulated experience with designing and administering performance tests. In addition to the work with concrete finishing, staff experimented with a test on using the Mueller tapper, a device designed for use in tapping pressurized water mains. Use of this equipment requires critical attention to sequencing and other details. Ultimately, it was decided that this was not such a important part of the trade to merit universal testing. Work also began on an assessment procedure for hydrostatic testing of potable water distribution piping. Discussions were held with Northwest Utilities regarding their performance testing and certification procedures for fusing high density polyethylene pipe used in natural gas applications. Efforts are continuing at Laborers-AGC on the initiative to develop performance testing.

Under a separate contract with the U.S. Department of Education, Laborers-AGC has begun building industry consensus to develop skill standards for laborers in the Heavy-Highway field and in environmental construction. Coalitions of labor, educators, employers, and industry associations have convened and begun to examine in detail the jobs that laborers perform in the environmental industry and in the heavy-highway industry. Among their tasks are to (a) select jobs, (b) perform task

analysis, (c) develop lists of skills, knowledge and attitudes; (d) develop performance assessments, (e) develop a certification program; (f) identify and accredit training providers, and (g) promote/market the program to the industry.

Development of a Career Path for Laborers. Several of the aforementioned activities—including developing training, performance testing, educational linkages—are elements of a larger vision to build a career paths for laborers.

A workshop was conducted by the Career Path Committee in Florida in January 1993 to advise national Laborers-AGC staff on the directions that should be taken with respect to development of a career path and linkages to education for laborers. Among the recommendations generated through the workshop were the following: (a) develop a high school program, preferably other than the GED, for workers who desire it; (b) develop degree/exchange options at two-year and four-year college and professional school levels for members; (c) expand the literacy program; (d) finalize an apprenticeship program; (d) develop for the industry a skill testing and certification program; (f) develop a national record to facilitate portable documentation of tested skills, and assist affiliated local and regional funds to implement to program.

During the past two years, several steps have been taken to help establish the occupation of laborer as a recognized, regular profession. Project staff made application to the U.S. Employment Service to obtain recognition for laborers occupations in the Dictionary of Occupational Titles (DOT). Three new occupational code requests were approved and assigned temporary code numbers in August 1993:

- Construction Craft Laborer Supervisor DOT 869.131-580
- Construction Craft Laborer DOT 869.463-580
- Construction Craft Laborer Apprentice DOT 869.463-581

The job description includes the following "performs any combination of duties as described under Construction Craft Laborer on building construction, heavy and highway construction, environmental restoration, tunnel and shaft construction, and demolition projects."

Obtaining an occupational designation is important because it gives official recognition to the work of construction craft laborers, promoting their inclusion in guidance materials. Also, a DOT number is a prerequisite for the U.S. Department of Labor to designate an occupation as "apprenticeable." Under the provisions of 29 CRF 29, the occupation must be "recognized across the industry" and the BAT has interpreted this to include designation of DOT number.

As of December 1993, apprenticeship councils in four states—Washington, Oregon, Kansas and Kentucky—and in the District of Columbia had approved apprenticeship programs for laborers. In July 1994, the Bureau of Apprenticeship and Training of U.S. Department of Labor announced its final approval recognizing the Construction Craft Laborer as apprenticeable nationally.

Automated Tracking System. The development of the Automated Tracking System grows out of a section in the August 1992 *Strategic Plan for Laborers' Training* entitled "Tracking, Monitoring, and Evaluating Training and Trainees." The key idea advanced by the subcommittee working on this initiative was to gather system-wide data on training outcomes to use as a basis for making informed program decisions about training. The group decided to pilot a tracking system to collect information on the work records of former trainees in selected sites. Four sites volunteered to conduct the test. These included two training sites within the Cooperative Demonstration Project—Chino Valley, Arizona and Mineral Wells, West Virginia—and two other sites—St Louis, Missouri and Belton, Missouri.

Each of the four sites took a different approach to obtain follow-up information. St Louis tried to solicit the information directly from individual members through a mailed survey. West Virginia relied upon business agents to send the training fund information on job referrals made. Arizona sought to have shop stewards to compile and report the information. In Kansas City, the Training Fund itself collected the information.

Overall, results to date have been disappointing. Arizona and Kansas City lost enthusiasm for the project soon after they began, due in large part to the weak response they received from their union locals. St Louis received a very poor response rate to the first 200 letters it mailed to former trainees. As that local fund has learned, the members have little incentive to respond.

The West Virginia experience likewise has not worked well. There the survey is a two-step process. First the local business manager fills out a form to indicate a former trainee has been referred to a job. Follow-up letters with a survey then are mailed to both the member and the contractors. As designed, this system offered the added virtue of soliciting direct feedback about the training from its primary customers—employers and trainees. A manual review of the records made by the author in December 1993, revealed that among seven local unions in the state, only 33 job referral responses had been received from business agents (of which 18 came from one union local in Huntington). The West Virginia Training Director then mailed questionnaires to 33 contractors and workers involved and received responses from 20 of the contractors but only 4 workers. While this effort may have some limited beneficial effects in marketing the training efforts to contractors, it has not been the "automated" mechanism to collect "systematic" data about the effects of training initially hoped for.

The Oregon training center subsequently joined the demonstration project. collecting follow-up information on all its completing trainees, prompted in part by its experience with an apprenticeship program for which apprentices must report and document their hours worked to gain eligibility for progressive wage increases. As in West Virginia, Oregon used a two-step process, obtaining job referrals from Oregon union locals and generating a letter and questionnaire to trainees and their employers. At first, the response was disappointing. However, with a serious commitment from staff to make vigorous follow-up efforts (including where necessary up to 3 follow-up letters and a telephone call), the training center's administrative assistant was able to obtain cooperation from local unions on job dispatches and nearly a 100 percent response rate from employers sending evaluations of the trainees and the training. The experience in Oregon indicates that staff commitment and the introduction of apprenticeship for laborers may facilitate tracking of the subsequent work records of individuals in training.

Another approach holds promise, however. That is tapping into the computerized administrative records health and welfare funds to obtain information on the hours worked and earnings of trainees subsequent to their training. While this approach raises methodological problems as an evaluation tool, especially in relation to the choice of an appropriate comparison group and in avoiding selectivity bias, it offers significant potential for future exploration. These records of hours worked are computerized and carefully maintained. As administrative records maintained for another purpose, health and welfare fund records offer an unobtrusive source for obtaining at least some of the empirical data desired regarding the outcomes of training. They also offer the potential advantage of being computerized records. However, the difficulties encountered in exploring the use of health and welfare records for the present evaluation reveal that even this approach will require considerable effort to develop a smoothly operating "automated tracking system."

Ultimately, the implementation of apprenticeship may help resolve some of the problems in reporting process. Apprentices are required to report and document their hours worked to make them eligible for progressive wage increases. But if laborers follow the pattern of other construction trades, it is highly unlikely that all new entrants will be apprenticed.

DISSEMINATION ACTIVITIES

One of the aims of the Cooperative Demonstration project was to generate interest, commitment, and operation of regional training among other Laborers-AGC sites and industries. During the first quarter of the project, a plan was submitted to accomplish this dissemination listing ten (10) specific products to be developed. The following is a status report on each of those products:

1. Brochures—A brochure summarizing information about the available training, locations, dates, and activities was to be disseminated to unions locals throughout the U.S.

Status: Throughout the project, three versions of this brochure were produced and distributed to unions locals throughout the U.S. Hundreds of copies also were distributed at the meeting of the local affiliates of the Education and Training Fund, at meetings of the Safety and Health Fund, and at the Labor/Management Cooperation Fund; at various professional meetings; and in response to numerous inquiries by mail and telephone.

2. Public Relations Video—A video providing information on regional training

Status: Video footage for this film was shot in Oregon; but more urgent needs for training videos placed training videos ahead of the public relations videotape in the production schedule. Four training videos were developed and disseminated through the project.

3. News Articles/Releases

Status: The Laborers-AGC was featured on the national NBC Nightly News in a segment entitled "The Face of the Future" shown on national television on August 22, 1993.

4. Journal/Trade Magazine Articles

Status: Articles containing information about the project were submitted and published in the following publications and trade magazines:

John F. Goodman, "A Union Trains for the Future." *Training and Development*, vol. 46, no. 10 (October 1992), pp. 22-29.

Constructor

Laborers-AGC, *Training Update*

Laborers International Union, *The Laborer*

Masonry Contractors Association magazine

Engineering News and Review

BNA, *The Construction Labor Report*

5. Trade Show Booth and Presentations

Status: Exhibits and presentations were conducted on the Construction Skills Project as part of the following conventions and conferences:

All Union Trade Show, Portland, Oregon (exhibit booth)—May 1993
The Oregon AGC Conference (exhibit booth)—May 1993
Annual Masonry Construction Exposition, San Diego—March 1993
Boys Ranch—January 1993
Women in the Trades Conference—April 1993

In addition, staff from the Laborers-AGC attended the American Vocational Association annual meetings in 1992 and 1993.

6. Policy Manual—This was to be a "how to" guide explaining the Laborers-AGC model of regional training.

Status: Policies and procedures are well documented in the reports on the project and the "Lessons Learned" document making a policy manual redundant.

7. Report on "Lessons Learned" About Regional Training—This report describes the projects and its activities, reviews critical incidents and decisions in project development, various strategies and their relative success and reviews key elements of successful programs. The document relates issues of particular concern to regional training with emphasis on its advantages and disadvantages.

Status: A copy of this report was prepared and submitted with the final report for the project.

8. Automated Record Keeping System—This system, to be developed through the project, aimed to track trainees through training and afterward through competency acquisition and employment. Once developed and refined, it will be disseminated to program administrators of all Laborers-AGC training funds.

Status: As of September 1994, the system remained under development. The project had experienced disappointing results with the tests of variations of the system in the four pilot sites; but the training center in Corvallis, Oregon experienced some positive

results with reporting of job referrals and in obtaining evaluation of training from contractors.

9. Certification Registry—The certification registry is a product of the Cooperative Demonstration Grant that aims to provide a proficiency profile of individuals in order to acknowledge their skills.

Status: Although a formal registry model has not been developed, hiring hall referral agents are being informed of the training record of individuals.

10. Workshops—The offer here was extended to teach other industries how to conduct regional training.

Status: Although considerable interest in regional training has been developed, within the Laborers-AGC, no requests were received from outside the Laborers for such a workshop.

EVALUATION QUESTIONS

This section reviews the project activities, accomplishments, and shortcomings as a whole, making use of the framework of objectives and questions outlined in the Evaluation Plan submitted for the project.

Objective #1: Train adequate numbers of skilled laborers through the program.

Question One: *How many laborers were trained through the program?*

A total of 883 construction craft laborers were trained in 67 classes submitted for reimbursement under the grant by the five regional training providers over the two-and-a-half year period of the grant.

Question Two: *How does the number of laborers trained compare to labor pool needs in the regions served by the programs?*

The actual number of workers trained through the grant was a small portion of the total needs—amounting to perhaps little more than one percent of replacement needs alone.

At a turnover rate of 25 percent per year among the membership of the Laborers' Union and with approximately 300,000 active working members in construction in the U.S., the industry annually needs 75,000 workers just to fill replacements. Over a period of two-and-a half years, the estimated number of replacements needed would be 187,500. Since the regional training centers in this project covered 24 states or approximately half of the country, an estimated 93,750 replacement workers would be needed over the two and a half years of the project.

More important, the project helped to improve and put into place a training system—with new courses and instructional materials, a cadre of trained instructors, and a system design—to reach many more than the 883 workers whose training was paid for by the project. In a real sense, the training these workers obtained served as the pilot experience to help put the innovations in place.

Indeed, the Department of Education Cooperative Demonstration grant comprised only a small part of the total Laborers-AGC training picture. Across the nation during 1993, Laborers-AGC training funds conducted a total of 3,610 courses for 41,287 trainees at an average of 37 contact hours per trainee. [1] In a real sense, the Department of Education grant aimed to influence and improve the broader system.

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[1] Laborers-AGC Education and Training Fund. *1993 Training Fund Survey.* Pomfret Center, Co., 1994., p. 1.

Objective #2 **Expand the annual hours worked by the membership**

Question One: *How many hours do training program participants work and how does that number compare to samples of other laborers?*

One approach to determine the impact of training is examine the work and earnings records of individuals who go through training compared with a matched sample of workers who have not. Since health and welfare funds keep track of hours worked and earnings in the jurisdiction, it seems to offer an ideal source of information.

In order test the feasibility of using such data, we tried the procedure with the health and welfare funds in West Virginia and in Oregon where the training funds had good relationships with their counterpart health and welfare funds and where both funds operated on a statewide basis.

Our initial plan was to check the work records of new inductees to the union who had participated in the General Construction Skills course against a matched sample of new inductees who had not taken General Construction Skills. However, we ran into several problems with this approach. Information on the time of union induction was not consistently recorded. Also, the General Construction Skills Course was taken by many experienced workers—not just new inductees. Thus the approach would have yielded too small a number of workers to make appropriate comparisons.

We encountered several other problems and limitations with this exploratory research effort, including the following:

(1) Although the health and welfare records are computerized, they all operate on different computer programs which by and large do not have the readily accessible inquiry capability to obtain the information requested. Thus a sample of records either has to be obtained through special programming or must be pulled manually. In our exploratory efforts, the data were collected manually.

(2) Many people have intermittent attachment to the industry. Thus, the induction date registered on the health and welfare records may reflect only the most recent eligibility date to the health and welfare fund—not the initial union induction date. Similarly, project records were incomplete on this data element. In West Virginia, 25 of 58 records checked did not note the induction date to the union.

(3) Characteristics information (other than age, gender, place of residence, and local union) is not available on health and welfare records to enable us to select an appropriately matched group with which to compare those who have been through the training. Ideally one needs information such as level of educational attainment, years of experience at the trade, and gender/race/ethnic group. Information on

member characteristics is collected by the international union, but it was not available to the project.

(4) Health and welfare records reflect only earnings for hours worked as employees to signatory contractors within the jurisdiction. If workers worked in another jurisdiction or in another industry their hours are not recorded in the local health and welfare records. This was an important factor in West Virginia—especially with workers who resided near the Ohio state border and occasionally worked with locals in Ohio. Likewise, if they work as self-employed (as the West Virginia records indicated that at least four of the thirty-five records selected did), their work hours and earnings while self-employed were not counted.

(5) Health and welfare records generally contain data on hours worked and earnings by month. They contain no information regarding the occupational category in which the participant worked or the skills used.

(6) The health and welfare funds include certain laborers working outside of construction. For example, the health and welfare fund in Oregon includes shipyard workers and employers in the Portland area which do not offer an appropriate comparison to the labor market situation of construction workers. Plant maintenance workers who are laborers are often included in the health and welfare funds.

(7) Participation in Laborers-AGC training outside of this demonstration grant by individuals must be considered as well. While laborers may not have participated in a class sponsored by this Department of Education project, they may have attended other Laborers-AGC courses.

It should be noted that all of these problems are surmountable, given sufficient time and resources and the assistance of local experts who have a rich knowledge of the data. For example, someone who is familiar with the firms under contract knows which are construction workers and which are plant maintenance workers or shipyard workers.

Results of exploratory research. The Training Center in Corvallis, Oregon conducted 18 sessions with 217 trainees under the grant. Among these, the 75 who only participated in the 8-hour presentation in craft orientation were eliminated, leaving a total of 142 trainees. Among the remaining workers, the following decision rules were applied: all workers from Oregon who had taken at least one class under the demonstration grant, and who had a work record in the construction industry recorded on the health and welfare records at any point between 1992 and 1994 were selected. The remaining total was 30 workers. Among these we found 17 workers who had taken a class either in 1992 or in early 1993 (through April) and determined their work history for 1993 and the first quarter of 1994 to be the following:

	Hours worked 1993	Hours worked 1994 (first 3 months)
1.	700	300
2.	1401	102
3.	2441	510
4.	471	0
5.	1851	0
6.	1662	467
7.	678	395
8.	1090	0
9.	842	163
10.	832	0
11.	1299	562
12.	1069	101
13.	1317	388
14.	973	168
15.	810	402
16.	845	37
17.	914	169
MEAN AVERAGES	1,129	290 [2]

In absence of the ability to obtain information of a matched comparison group, a relevant standard against which to compare these hours is the work record of the union local 320 which includes only construction workers. During 1993, the local averaged 1,240 hours of work for the year. This figure includes all active local members of the local.

The Mineral Wells Center in West Virginia conducted 13 sessions with 137 trainees under the grant. Of this number, we eliminated all trainees known to be from states other than West Virginia, sorted out all those who were known to be working outside of construction, and consolidated the records on individuals taking more than one class. We then requested computer printouts of the contribution records for 1990 through April 1994 from the Health and Welfare fund for all of the remaining 58 workers.

[2] This average is for the first quarter for all who worked at all during the period.

Since contributions made to the Health and Welfare fund were available on a monthly basis, in West Virginia we tracked the work record and earnings of individuals for the 12 months immediately following their training in any construction skills training course. Among the 58 workers:

- six were either not enrolled in the health and welfare records or had no work history from 1990 through April 1994 (recall that participants did not have to be union members to be eligible for training)
- 21 had taken training late in 1993 and thus had not yet accumulated 12 months of work history since the training.
- information on 2 workers was incomplete or missing.

Among the remaining 35 workers, records of the hours worked and earnings reported to the health and welfare fund over the 12 months subsequent to training was as follows:

	Hours worked	Earnings
1.	81	$1,229
2.	0	0
3.	2043	$22,567
4.	1160	$13,677
5.	1097	$16,697
6.	1444	$20,730
7.	648	$8,994
8.	222	$3,658
9.	231	$3,279
10.	798	$10,926
11.	767	$10,741
12.	795	$12,501
13.	235	$3,720
14.	946	$10,621
15.	1358	$19,741
16.	1537	$23,261
17.	734	$10,409
18.	1551	$21,014
19.	48	$675
20.	397	$5,699
21.	794	$10,788
22.	16	$219
23.	735	$10, 888
24.	1031	$17,589
25.	305	$4,378
26.	349	$6,203
27.	640	$8,943
28.	62	$1,057

29.	1148	$15,442
30.	214	$3,318
31.	636	$10,348
32.	1587	$25,174
33.	0	0
34.	654	$8,964
35.	1485	$19,691
MEAN AVERAGES:	736	$10,375

In West Virginia also, we were unsuccessful in developing a matched comparison group. But as a rough standard of comparison, the average annual hours worked by active construction members (paying working dues) was reported to be 802 hours in 1993.

To those unacquainted with the construction industry, the annual hours and earnings reported in Oregon and West Virginia may seem quite low. They call into question whether employment counted in the health and welfare fund may be supplemented with work outside of the jurisdiction either in construction or in other industries. In the West Virginia records, we noted that several individuals reported themselves as working as contractors for periods of time.

There is wide variation among individuals reflected in the data. Part of this variation stems from the transitory attachment some individuals have to the industry. Remaining employed consistently is a key factor in maintaining one's earnings in the construction industry. Many argue that broadening one's skills through training is one of the best defenses against unemployment in the construction industry.

Neither the data displayed from Oregon nor from West Virginia were samples. Rather they represent the data available on the universe of trainees for whom relevant information is available at those two sites.

Unfortunately, on the basis of these data, we cannot conclude much about the payoff to the training. Better matched comparisons are needed. While most of the trainees in our study were new inductees to the trade, they were compared against all workers, many of whom had extensive experience at the trade. It can be said that after receiving 80 hours of training, the trainees were within 10 percent of the average annual hours worked by all construction members.

Objective #3 **Conceptualize a Formal Career Path.**

Question One: *To what degree is the career path developed and operational?*

Since the inception of the project in January 1992, considerable progress has been made to conceptualize a formal career path for construction laborers. Consensus has been mobilized among workers and contractors in favor of a career path, as indicated by the results of a January 1993 workshop on the development of a career path and educational linkages, held as part of the Laborers-AGC Tri-Fund Conference.

Laborer's-AGC construction skills courses have been improved and sequenced into levels. The occupation of Construction Craft Laborer received official designation as a recognized occupation. National apprenticeship standards for it have been developed by the industry and approved by U.S. Bureau of Apprenticeship and Training. The first PONSI recommendations are in place to offer college credit for courses provided by the Laborers-AGC Education and Training system, and agreements have been made with Lane Community College which offer construction laborers access to a one-year certificate program and a two-year college associate's degree and with Thomas Edison State College for a four-year college degree. The beginning of an industry-based skill assessment and certification system is coming into place with the use with the skill certification of Concrete Flatwork Finisher, developed by a collaboration between Laborers-AGC and the American Concrete Institute (ACI).

Objective #4: **Develop and use a comprehensive Evaluation Plan**

Question One: *To what extent is an Evaluation Plan complete, in place, and in use?*

Noting the information requirements elaborated in the evaluation plan submitted near the start of the project, the national office of Laborers-AGC and participating regional training centers maintained careful computerized records regarding the project's activities.

Objective #5: **Develop and use a comprehensive Dissemination Plan**

Question One: *To what extent has the project provided information and built an audience for regional training?*

As indicated in the section on Dissemination Plan in this report, the Construction Skills Training Program and its regional training model have been publicized within the Laborers-AGC system through articles in the industry trade newspapers and newsletters, through presentations at annual meetings, and through word-of-mouth to the Training Funds. In addition, the program has received national

attention through publicity in the news media and in various national professional publications.

Question Two: *To what extent has the project assisted others in considering or moving to regional training?*

Through the grant, project staff presented seven Train-the-Trainer Courses in Concrete, Asphalt, Craft Orientation, General Construction, and Foreman Preparedness. These courses drew an attendance of 94 instructors from 35 affiliated training funds. These courses for instructors have become a key mechanism for dissemination of the Cooperative Demonstration Program to other Laborers-AGC training sites. Through the project, a nationwide cadre of trained instructors has been developed so that a full range of courses, and the proposed career path can be implemented not only in the original five grant sites, but in other sites as well.

Laborers-AGC staff have offered to present training sessions on the regional models, but they have not yet received requests for such training from outside of the Laborers-AGC network.

Objective #6 **Develop and implement a competence/performance rating system.**

Question One: *To what extent is a competency/performance system in place and being used?*

The competency/performance rating system is not yet fully in place. However, progress has been achieved. The competency/ performance system is available and in use for portions of the trade dealing with concrete. Through June 1994, fifteen members had been certified as concrete flatwork finishers and four instructors had been certified as Examiners through the Laborers-AGC in collaboration with the American Concrete Institute (ACI).

Question Two: *To what extent is the performance rating system useful?*

Since the system was not in place, this question could not be answered. Trainees at various training sites interviewed for this project were almost universally positive about the prospects of performance rating and certification because they believed it would document their skills to employers thereby enhancing their prospects for employment. Employers likewise had positive attitudes about performance rating, viewing it as an advance over the certification for seat time spent in skill development courses.

Objective #7 **Develop and implement an automated data system.**

Question One: *To what extent is the system in place and usable?*

The design for the automated data system was developed through a Special Task Force on the Strategic Plan for Laborers Training. The Task Force included several key representatives from across the country. Their proposal for a design and pilot test was adopted nationally as part of the *Strategic Plan for Laborers' Training* in August 1992.

Initially, the automated data system was established at two pilot sites in the project: Arizona (Chino Valley) and West Virginia (Mineral Wells). Two additional sites volunteered to test the automated data system—Kansas City and St. Louis. Each of the four sites took a different approach to obtain follow-up information. St Louis tried to soliciting the information directly from individual members through a mailed survey. West Virginia relied upon business agents to send information on job referra's made. Arizona sought to have shop stewards to compile and report the information. In Kansas City, the Training Fund itself planned to collect the information.

Arizona and Kansas City soon gave up on the project, primarily due to lack of cooperation from local unions in sending job dispatch information. West Virginia similarly has found it difficult to obtain job referral information on a timely basis. St. Louis has obtained a low-to-moderate response rate from trainees directly.

In one bright spot, Oregon has undertaken to collect follow-up information on all its completing trainees, prompted in part by its experience with an apprenticeship program for which apprentices must report and document their hours worked to gain eligibility for progressive wage increases. With the commitment from staff and vigorous follow-up efforts (including where necessary up to 3 follow-up letters and a telephone call), the training center's administrative assistant has been able to secure cooperation from local unions on job dispatches and nearly a 100 percent response rate from employers sending evaluations of the trainees and the training. The experience in Oregon indicates that staff commitment and the introduction of apprenticeship for laborers may facilitate tracking of the subsequent work records of individuals in training. This initiative may be mis-named as the "automatic data system." There is nothing automatic about it; it requires considerable staff effort.

Overall, however, results to date have been disappointing. On the whole, relying on voluntary reporting has required considerable effort for incomplete or little results. A more promising avenue for accomplishing this objective may be to use the administrative record systems of the health and welfare funds, which track hours worked and earnings. But the only reasonable way to accomplish this is by transfer of computer files; exploratory research for this evaluation report indicates such

transfers must be made on a manual basis now and much developmental effort be required to establish the effective transfer of such information electronically.

Objective #8 **Develop and implement new courses.**

Question One: *How many new courses were implemented?*

Through the project, three new courses were developed and pilot tested

Craft Orientation	8 hours
General Construction Skills	80 hours
Foreman Preparedness	40 hours

All are integral to the establishment of the career path that Laborers-AGC is pursuing. The 8-hour Craft Orientation course allows the Laborers-AGC to make presentations to students in schools and to other groups of potential applicants. The course provides an overview of the nature of the work of laborers. General Construction Skills is intended to become the gateway to advanced level courses. Foreman preparedness is key to developing upward mobility in a career path for construction laborers.

The course for Asphalt Workers (40 hours) was revised and three courses previously offered in 40-hour segments were improved and combined into 80-hour blocks. Those include:

Trench Protection and Principles of Pipelaying	80 hours
Concrete Practices and Procedures	80 hours
Practices and Procedures of Mason Tending	80 hours

Question Two: *How were the new courses developed in relation to industry need?*

Decisions on new courses are made on the basis of input from contractors and members. Several channels are used to communicate this information to the national staff of Laborers-AGC. Recommendations for new courses are sought at national meetings such as the National Tri-Fund Conference, held in Florida each February. In these meetings, reactions are also sought to new courses proposed for development. Recommendations also come from the trustees of the regional/local training funds, who are composed of contractors and union officials and from regional/local training fund directors who are in close contact with workers and contractors. Recommendations are solicited as a standard item on Employer Evaluation forms filled out by direct supervisors and contractors regarding their satisfaction with the skills of individuals recently trained by the fund. In fact, the final question on the

Evaluation form is "What new tools, techniques, or products do you recommend we include in our training?"

These standard channels are supplemented by information collected through focus groups with members and contractors and by a formal "Needs Assessment" survey conducted nationally with contractors, union officials, and training fund directors. The 1993 Laborers-AGC Needs Assessment survey rated and ranked current and future training needs and sought to ascertain awareness of Laborers-AGC training. More than 80 percent of the respondents to the 1993 Needs Assessment survey were contractors.

Objective #9 **Assess the cost efficiency and effectiveness of the regional training models.**

Question One: *What are the actual and comparative costs of regional training?*

All of the participating training centers were residential centers, except in Iowa where the instructor took the class to the trainees in various locations around the state.

The following table shows the costs for mason tending classes conducted at the five participating training centers under the grant The highest average costs were in found in Iowa which operated training on a mobile basis. The cost per trainee was $1,082 which was 20 percent above the average of all centers and 33 percent above the lowest cost fixed-site center in Louisiana. Several factors influence cost, especially the recruitment and turnout of trainees, and the trainee-to-instructor ratio.

Mobile training—bringing the instructor to the trainees—is often more efficient for short-term classroom-based instruction. However, longer classes such as mason tending which involve extensive hands-on training with large amounts of equipment and materials incur higher costs using the mobile training model. In addition to renting classroom space, mobile instructors need to rent equipment from local vendors and to purchase all new supplies of materials for each presentation. In contrast, a fixed-base training site can stockpile an inventory of equipment and materials. The mobile training model also demands an experienced, highly organized instructor who can improvise to accommodate changing and unforeseen circumstances. Locating a suitable training site with security measures in place for expensive equipment can also pose difficulties in the mobile model.

Comparative Costs for Training in Mason Tending (80 hours)

Fund	Number of Classes	Number of Trainees	Average cost per Trainee
Iowa (mobile)	3	35	$1,082
Arizona (fixed site residential)	4	62	$ 893

Louisiana (fixed site residential)	3	50	$ 814
W. Virginia (fixed site residential)	2	25	$ 826
Totals	12	160	$ 905

Objective #10 Develop linkages to the Educational Community.

In its initiatives on education and the development of a career path for laborers, Laborers-AGC has been careful to ascertain the interests of the membership. Educational linkages and the Laborer Career Path were the focus of a workshop held at the Laborers-AGC Tri-Fund Conference in Florida in January 1993. The concept of a career path was strongly endorsed by the workshop participants, who also wanted arrangements for obtaining regular high school diplomas—not GEDs—and access to college credit.

Question One: *What linkages have been developed and how do they function?*

Two types of educational linkages have been attempted through the project: (1) a school-to-work linkage effort centered in West Virginia which aimed to place new high school graduates into jobs, and (2) a work-to-school initiative to encourage incumbent workers to continue their education. A key part of this latter endeavor included college linkages to allow members to obtain college credit and advance their education.

School-to-work linkage—After much discussion with affiliates about establishing national formal school-to-work and work-to-school programs, it was determined that these initiatives may best be offered on a local basis rather than a national basis because American education is organized on a state and local basis.

West Virginia was chosen as a pilot site because Laborers-AGC had excellent relations with the state's Vocational Director who served on the project's advisory committee.

The school-to-work linkage effort planned was to be a three-step process that included (1) presenting the Craft Orientation Course to high school students at selected West Virginia schools as an outreach and career exploration activity, (2) offering training to interested high school graduates in the 80-hour General Construction course at the West Virginia Training, and (3) placement into jobs. The pilot design was never implemented.

Work-to- School: College linkages—This initiative proceeded on three fronts. Project staff prepared course submittals to the American Council on Education (ACE) Program on Non-Collegiate Sponsored Instruction (PONSI), requesting recommendations regarding college credit for participation in various Laborer-AGC environmental courses. Based on the ACE/PONSI assessment, six courses were

selected for credit ranging from 1 hour to 3 hours. The recommendations for credit are published in The National Guide to Educational Credit for Training Programs which is distributed to colleges and universities for their use in granting academic credit. Any person who has taken a recommended course in the last six years can apply for credit at the academic institution of their choice.

Negotiations were held with Lane Community College in Corvallis, Oregon to establish a program to package college credits for construction skills courses on a standardized basis. With additional courses in math, technical writing, and science (which can be taken at the person's local community college and transferred to Lane Community College), a laborer can accumulate credits to achieve a two-year associate's college degree.

Laborers-AGC initiated contacts with Thomas Edison State College as a strategy in its effort to develop a comprehensive career path of work and training opportunities for members. Just as the Lane College option provides opportunities for a two-year degree, the Edison State option opens opportunities for laborers to obtain a four-year degree. The aim was to find an accredited four-year institution that (a) accepts and records ACE/PONSI credits; (b) offers additional course work in a variety of subjects and majors; and (c) has non-restrictive residency requirements so that working adults can attend. Thomas Edison State met all of these criteria.

The college linkage efforts are part of a broader strategy to build the career path for laborers that promotes upward mobility into more technical and advanced jobs.

Question Two: *How successful are the linkages?*

The school-to-work initiative did not work well for several reasons. The occupation of construction laborer has an image problem which is compounded by mis-information in career guidance material. The stigma makes it difficult to recruit educators and students to be interested in the trade. Secondly, a perverse incentive was at work. Because West Virginia, the site chosen for the pilot effort, had no apprenticeship program for construction laborers, full journeyman rates would have to be paid to youths working on public work jobs even though they were less productive than other workers. Further, if the youth worked on private sector jobs paying lower wages, their lower wages would be reflected in wage surveys which eventually could undermine the rates paid to incumbent laborers under the Davis Bacon law.

The work-to-school initiatives were more successful. Recommendations by ACE/PONSI in favor of granting from one to three units of college credit were made for six courses in the environmental field offered by Laborers-AGC. Negotiations were successfully concluded with Lane Community College to offer laborers access to a two-year degree and with Thomas Edison State College for a four-year college

degree program. All of these developments were achieved near the end of the project. So although the arrangements are now in place, no laborers yet had taken advantage of these programs to become college students.

Question Three: *What key elements allowed establishment and operation of linkages?*

Personal contacts with educators made through the project's advisory panel assisted in the development of educational linkages. Dr. Adam Sponougle, state vocational director in West Virginia, introduced staff of Laborers-AGC to local educators to collaborate on a school-to-work project.

In a more successful case, Carl Horstrup, a member of the national advisory panel for the project, helped negotiate the linkages for college credit at Lane Community College where he works.

SUMMARY AND CONCLUSIONS

This was an ambitious project with multiple goals and activities, including developing new courses and improving curriculum materials, training instructors in their use, training workers, and most of all, making strategic improvements in an ongoing industry training system, and linking it to other educational systems, and disseminating the innovations widely.

Through the project, Laborers-AGC developed three new courses, revised or improved four others, and produced four videotapes for use in training. A total of six train-the-trainer sessions were conducted for instructors with 94 participants. The project funded training for 883 laborers in 67 sessions, compared with 948 individuals in 59 sessions projected in the original proposal. However, an additional 140 laborers received training in the new-format Construction Skills Training courses at the five participating regional sites with private funding during the period of the grant.

Making strategic improvements in Laborers-AGC training operations were the most ambitious activities attempted by the project. The project resulted in a better understanding of the relative costs and advantages of various forms of fixed site and mobile training. **Significant progress was achieved in conceptualizing and developing a career path for laborers, but much remains to be accomplished in actually implementing it.** Local school-to-work initiatives were designed by the project but never put into place. Construction Skills Training courses were reorganized and sequenced but in practice laborers can still take courses in any sequence they want in most areas. "Construction Craft Laborer" obtained status as a recognized apprenticeable occupation, and national apprenticeship standards were approved by the U.S. Bureau of Apprenticeship and Training just after the project ended. Arrangements were made for laborers to obtain college credit for their training and to enroll in programs to provide 2-year and 4-year college degrees at Lane Community College and Thomas Edison State University, but no laborers have yet enrolled in these institutions. Experience was accumulated with performance testing through the project and considerable progress was made in mobilizing consensus among workers and employers in the industry in favor of performance testing. Laborers-AGC has built external certifications into its training (e.g., for CPR/first aid, for the use of powder-activated tools, and in Rough Terrain Forklift Safety and Maintenance (in collaboration with the Mason Contractors Association of America). Through this project, Laborers-AGC (in collaboration with the American Concrete Institute) developed performance testing for concrete flatwork finishers and began to offer industry skill certification. A certification registry providing a full proficiency profile of individuals is not yet available, but the Laborers-AGC training centers do maintain good computerized records on who has taken what training and hiring hall job referral agents are being informed of the training record of individuals. Several approaches were attempted to track the work record of trainees subsequent to training and to obtain feedback from employers and trainees assessing the

training. In Oregon these efforts have met with success with contractors, but the response rate of former trainees was low. The administrative records of Laborers health and welfare funds offer a potentially rich objective source of data about hours worked and earnings after training: but to be useful, the information must made accessible by computer. Also, there are local idiosyncrasies with the data that can only be understood with the help of local expertise (e.g., Oregon health and welfare records include the records shipyard laborers and maintenance workers in addition to construction workers).

A clear accomplishment of the project was disseminating its results within the Laborers-AGC network. One sign is that of the 69 instructors (unduplicated count) who attended the train-the-trainer sessions for the various construction skills training courses developed through the project, only 13 came from one the five regional centers participating in the project. The remaining 56 were from 30 other training funds. In effect, the project has provided Laborers-AGC with a national cadre of instructors who are familiar with the new courses and materials developed.

As another indicator of successful dissemination within Laborers-AGC network, during 1994 requests were received from local training funds affiliated with Laborers-AGC for 4,935 copies of training manuals for courses developed and/or improved through the project, including:

Asphalt Worker	626
Craft Orientation	770
General Construction	1,101
Concrete	618
Mason Tending	807
Pipelaying	774
Foreman Preparedness	239
Total	4,935

At this point, replication and expansion of improvements in the Construction Skills Training program within the Laborers-AGC network is well on its way to being accomplished.

Despite the national publicity the project received, little interest in replication was expressed outside of the Laborers-AGC network by other trades and industry groups. Laborers-AGC had offered to hold workshops on conducting regional training for other trades and industries, but no such workshops were requested.