Enhancing the Communication Process Between Disadvantaged Business Enterprises and Prime Contractors

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An investigation was undertaken to enhance the communication between prime contractors and Disadvantaged Business Enterprise (DBE) subcontractors participating on Wisconsin Department of Transportation (WisDOT) projects. First, questionnaires were mailed to all 50 states, the District of Columbia, and Puerto Rico to compare the implementation procedures among the various DBE programs and identify perceived communication difficulties and potential enhancements. Personal interviews were then conducted with 25 prime contractors and 20 DBE firms in Wisconsin to identify specific communication difficulties and possible alternatives. Difficulties that the prime contractors described include (a) lack of DBE response to contacts, (b) too much effort required to solicit DBE interest in projects, and (c) lack of available information on DBE capabilities. The DBE firms were found to have only minor difficulty obtaining information prior to the monthly bid letting. Their difficulties were related to project-specific issues, including job site scheduling and receipt of timely payments. Five alternatives to enhance the communication process were identified and developed. The first alternative makes DBE project history and nonfinancial information more available to prime contractors when they contact the WisDOT DBE Support Service Office. The second alternative increases the availability and usefulness of the planholders list. The third alternative furnishes pre-bid information to contractors' personal computers. The fourth alternative identifies in the DBE directory which DBE contractors are actively pursuing state work. The fifth alternative identifies prime contractors' and DBE firms' interest in projects using a touch-tone computer system.

The Disadvantaged Business Enterprise (DBE) program remains a controversial issue throughout the country. Soon after the program was established in 1982, both the number and dollar amounts of DBE contracts nearly tripled. Further, the number of DBE firms more than doubled from 1,600 in 1982 to more than 3,300 in 1984 (*1*). The media, however, have often overshadowed these successes by reporting the apparent fraud, contractor difficulties, and high costs associated with the program implementation. In addition, many prime contractors still have difficulty finding capable DBE subcontractors in order to meet the established DBE participation goals. Capable subcontractors are those with adequate equipment and labor to fulfill their portion of the work at a competitive price.

Since the Surface Transportation Assistance Act of 1982, Section 105(f), became law, state departments of transportation (DOTs) have been required to have at least 10 percent participation on construction projects by socially and economically disadvantaged small businesses, unless a waiver is granted (*2*). The DBE program was first established to increase participation by minority-owned businesses (MBEs) on highway construction projects. Women-owned businesses (WBEs) were added to the 10 percent participation goal in 1986. To implement the DBE program, state DOTs have established certification procedures for DBE firms, published directories listing certified firms, and provided DBE support services.

Most state DOTs have allowed prime contractors unable to meet the established DBE participation on their projects an option to apply for good-faith effort. For approval to waive the project DBE goal, prime contractors must prove that reasonable efforts were undertaken to solicit DBE contractors. This proof often includes furnishing copies of solicitation letters, telephone logs, and bid records.

The Wisconsin Department of Transportation (WisDOT) perceived several communication difficulties between prime contractors and DBE subcontractors. It believed that prime contractors' letters and telephone calls to DBE firms often have a low response rate. WisDOT also perceived that some prime contractors feel that the required good-faith effort is too time-consuming and somewhat subjective. In addition, DBE firms were perceived to receive an abundant amount of notifications, some of which are not sincere. It also believed that some DBEs were not receiving timely or complete project information. The lack of communication that develops before the bid letting apparently results in further difficulties during project completion. The WisDOT TRANS-AC committee (made up of prime contractors and subcontractors, DBE firms, highway contractor association representatives, and WisDOT personnel) determined that a need existed to evaluate and recommend means by which the communication between DBE firms and prime contractors could be enhanced.

A 9-month research study was undertaken to enhance the communication process between prime contractors and DBE firms in Wisconsin. Three different types of data were collected for the investigation. First, a questionnaire was mailed to the departments of transportation of all 50 states, the District of Columbia, and Puerto Rico. Second, 25 prime contractors in Wisconsin were interviewed. Third, 20 DBE firms in Wisconsin were interviewed. The structure and results of each of these data collection methods are described. A prioritized list of alternatives to enhance the communication process between prime contractors and DBE firms is then presented.

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QUESTIONNAIRE STRUCTURE AND RESULTS

A questionnaire was mailed to the departments of transportation of 50 states, the District of Columbia, and Puerto Rico. Twenty-three usable responses were received, giving a response rate of 42 percent. This rate is believed to be high considering that the questionnaire consisted of 32 questions, many of which were open-ended. A copy of the questionnaire may be obtained by contacting the first author.

The DOTs in the following states responded to the survey: Alabama, Arkansas, Colorado, Florida, Hawaii, Idaho, Illinois, Kansas, Maine, Michigan, Minnesota, Montana, Nebraska, Nevada, Ohio, Pennsylvania, Texas, Virginia, Vermont, West Virginia, Wisconsin, and Wyoming. Puerto Rico also responded to the survey.

The survey had four primary objectives: (a) to compare the state DBE programs; (b) to identify and prioritize the perceived communication difficulties occurring between prime contractors and DBE firms in other states; (c) to identify alternatives used by other states to enhance communication; and (d) to obtain results from any previous investigations of communication difficulties.

The DBE programs established by the state DOTs are quite similar because of the guidelines set forth in 49 CFR Part 23. All of the state DOTs have DBE directories, require prime contractors to document their contact with DBE firms, and provide DBE support services.

Despite these similarities, some differences do exist. DBE directories include different types and amounts of information. Prime contractors use different means of contacting DBE firms depending on the requirements set forth by the state. Some states have implemented a computer system to enhance the communication between participants. Finally, each state DOT has tailored its staff to implement the DBE program in its own unique way.

The directories published by each state vary in size and content. The number of DBE contractors listed in the 1989 directors varied from 15 in Maine to 730 in Texas. The average number of DBE firms listed in 1989 was 238. This average remained fairly constant between 1985 and 1989. A substantial percentage of the firms listed, however, appear not to actively participate in state DOT work. The responding states estimated that an average of only 41 percent of the DBEs listed in 1989 actively pursued DOT work in that year. The actual percentage of DBEs bidding state work is probably higher than this because several states considered only the DBEs that received contracts rather than those pursuing state work. As shown in Table 1, many of the DBE directories contain information beyond the company's name, address, and telephone number, and the type of work they perform. Many directories include the expiration date of certification and the geographical locations that the DBE is willing to work in.

The state DOTs were asked to (a) list the types of methods prime contractors use to notify DBEs of their interest in receiving project bids, and (b) rank which method (telephone, letter, or advertisement) they believed was most effective. Prime contractors contact potential DBEs mostly by written notifications and by telephone. However, as shown in Table 2, other means of communication include direct personal contact, word of mouth, and project showings. The state DOTs were then asked to rank the effectiveness of the communication methods. Sixty-five percent of the respondents believed the telephone was more effective than letters. Twenty-two percent believed the letters were more effective. The other states did not indicate any difference in effectiveness between the two communication methods. None of the states indicated that advertisements were more effective than either written or telephone contact. In addition, four respondents indicated that personal contact between prime contractors and DBEs was effectively used in their state. A few other states indicated that contact with DBE support services and pre-bid meetings were other effective means of communication with DBEs.

TABLE 1 TYPES OF INFORMATION LISTED IN DBE DIRECTORIES

Type of Information	Number of States	Percentage of States
Company Name, Address, Phone	23	100%
Field of Work	23	100%
Expiration Date of Certification	10	43%
Contact Person's Name	9	39%
Districts That DBE Will Work In	8	35%
DBE/WBE/MBE Status	5	22%
Certification No.	4	17%
Years in Business	2	9%
Major Equipment & Tools	1	4%
Bonding Information	1	4%

Five responding states use a computer system to enhance the communication between prime contractors and DBE firms. Only the Montana and Virginia DOTs, however, provide systems that can be directly accessed by contractors. These systems provide bid tabulations, project addenda, an invitation to bid, a future project schedule, and a list of contractors who purchased plans. Contractors obtain the information from their own personal computers connected via modem to the state DOT offices. Montana's system has been in operation for only a short period of time, but Montana DOT personnel indicate that contractors have made numerous accesses to the system.

Each state varies in the relative amount of time spent on setting goals, certifying DBEs, providing DBE support serv-

TABLE 2 MEANS OF COMMUNICATION PRIME CONTRACTOR USE TO CONTACT DBE FIRMS

Means of Communication	Number of States	Percentage of States
Telephone	22	100%
Letter	20	91%
Advertisement	7	32%
Pre-Bid Meetings	7	32%
Support Service Office	4	18%
Direct Personal Contact	2	9%
Word of Mouth	1	5%
Project Showings	1	5%

Only responses from 22 States were included.

ices, monitoring projects, and verifying good-faith effort. As shown in Figure 1, a few states spend less than 500 staff hours per year providing DBE support services. On the other hand, four states—Florida, Illinois, Pennsylvania, and Virginia—spend more than 10,000 hours per year providing DBE support services. Several respondents included the time spent by consultants for support service along with the time spent by their own support staff. The range of time spent for DBE project-level monitoring is similar. Despite these differences, many states still spend the majority of time providing DBE support services and DBE project-level monitoring. Setting DBE goals and verifying good-faith effort consumes the least amount of time in most states. The data suggest that the total staff hours in each state depends on the amount of federal highway money received and the number of DBEs actively pursuing work.

The state DOTs were asked to rate the significance of the communication difficulties between prime contractors and DBE firms. Forty-eight percent were aware of some communication difficulties. Only the Colorado DOT believed the communication difficulties were significant. The state DOTs in Nevada, West Virginia, Hawaii, and Arkansas were unaware of any communication difficulties in their states.

The state DOTs were then asked to identify specific communication difficulties that prime contractors and DBE firms appeared to be experiencing. The three most common perceived difficulties were that (a) project details and scope are not adequately communicated, (b) prime contractors tend to delay soliciting DBE bids, and (c) payment to DBE firms is not timely or complete. Most of the communication difficulties appear to occur before the bid letting. The data suggest that DBE firms sometimes may not be able to prepare complete quotes because project scope or details are not communicated to them completely or in sufficient time. Prime contractors' expectations of subcontractors are sometimes not communicated until it is too late. There is no simple solution to this lack in communicating this information. It appears that simply mailing a notice or placing an advertisement conveys little knowledge of a prime contractor's expectations. Frequent telephone or personal contact is needed to convey such knowledge of project scope and coordination.

A more complete description of the questionnaire structure and results can be found elsewhere (*3*).

PRIME CONTRACTOR INTERVIEW STRUCTURE AND RESULTS

Interviews were conducted with 25 prime contractors in the state of Wisconsin. Eleven of the interviews were conducted in person, with the remainder conducted over the telephone. The underlying population for developing a sample of prime contractors was selected. For inclusion in the population, the contractor had to meet the following criteria: (a) be located in the state of Wisconsin, (b) have received at least one prime contract in 1989, and (c) not be certified as a DBE. Seventy-seven contractors met these criteria.

The investigation was designed to weigh the concerns of the larger prime contractors more heavily than the ones of the smaller prime contractors. This bias in the sample was achieved in two ways. First, the 10 contractors with the greatest volume of prime contracts in 1989 were automatically included in the sample. Twenty-five of the remaining 67 contractors were randomly selected. WisDOT personnel, however, substituted six of these chosen contractors because they wanted the sample to include more firms that frequently received prime contracts. This substitution removed some specialty firms who had bid as prime contractors. The final sample containing 35 contractors was then contacted for interviews. Twenty-five of these prime contractors participated in the interview process.

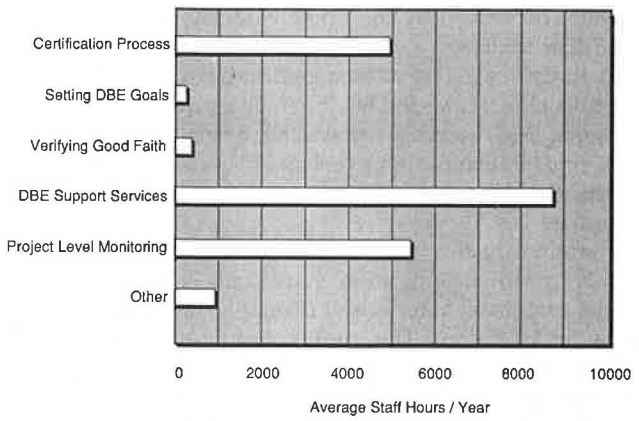

FIGURE 1 State DOT staff hours spent per year on various DBE activities.

Each prime contractor was asked a set of 33 questions. After these questions were answered, the interview was opened for general discussion and comments. The interviews had four main objectives: (a) to obtain general information about the contractor's annual sales, nature of expertise, and typical projects; (b) to analyze the firm's practices of soliciting quotes from DBE firms; (c) to identify and prioritize the difficulties that the prime contractor has in communicating with DBEs; and (d) to receive suggestions for enhancing the communication with DBE firms.

The type of work and gross annual volume of each prime contractor was identified. As shown in Figure 2, concrete paving, grading and underground work, and asphalt paving were the most common types of work identified in the sample. The average gross annual volume of all work, both public and

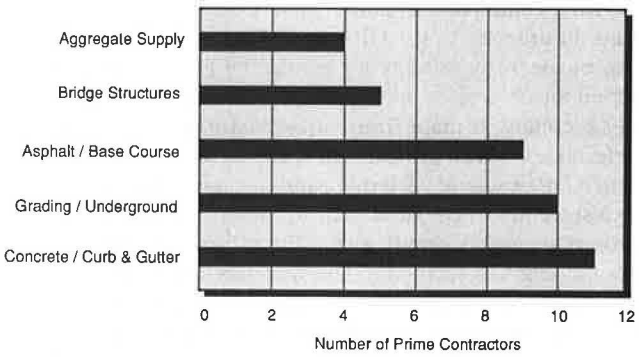

FIGURE 2 Number of prime contractors in sample, grouped by type of work.

private, performed by the prime contractors in the sample was $25.6 million.

A discussion of the most significant results of the prime contractor interviews follows. First, prime contractors' efforts to solicit DBE quotes are described. Second, prime contractors' organization of staff to solicit DBE quotes is presented. Third, the three main difficulties of prime contractors are described.

Prime contractors in Wisconsin contact potential DBEs primarily by written notifications and by telephone. Two of three prime contractors interviewed regularly mail notifications to potential DBE firms. These notifications usually precede telephone calls. It appears that most letters are sent approximately 2 to 3 weeks in advance of the bid letting. Some notifications list only the project numbers of the jobs the prime contractor is interested in bidding; others identify the types of work available for each job. In either case, it appears that few, if any, of the notifications personalize the letter or offer specific project details or schedules. Most follow-up telephone calls are made during the week prior to the bid letting. The telephone contacts appear to be more helpful for the prime contractor than for the DBE firm because the prime contractor receives immediate responses about whether the DBE is interested.

Three other means of communication are undertaken by some prime contractors in Wisconsin. More than half of the prime contractors mentioned that they use advertisements as a means to notify DBEs. Face-to-face communication occurs the night before the bid letting at the Concourse Hotel in Madison, Wisconsin, where the bid letting occurs. This contact is made as prime contractors make the final preparations for their bids. Finally, 72 percent of the prime contractors interviewed said they contact the DBE Support Service Office in Milwaukee, Wisconsin, to identify additional DBEs to solicit.

The number of DBE firms contacted by each prime contractor varies considerably. One prime contractor tries to contact 160 DBEs each month; another one does not try to contact any DBE firms. On average, prime contractors in Wisconsin try to contact 27 DBE firms before each bid letting. Five prime contractors regularly contact 70 or more DBE firms. Contacting this many DBE firms appears to be excessive. Some large prime contractors appear to pay little or no attention to the type of work or location of the DBE firms they contact. Table 3 identifies the criteria used to select DBEs mentioned by the prime contractors interviewed.

Prime contractors organize their staff in several different ways in order to solicit DBE bids. Depending on the prime contractor, responsibility for contacting DBEs is given to an estimator or project manager, an affirmative action officer, or a secretary. In many firms, an estimator or project manager determines which projects the firm is bidding, determines which DBEs should get letters, and then gives the information to a secretary to type and mail. In other firms, estimators or project managers simply give a list of project numbers they are bidding to a secretary. The secretary then uses the DBE directory to determine who should get letters, types the letters or postcards, and mails them. Sixty-four percent of the prime contractors inteviewed had the estimator or project manager make the follow-up telephone calls to DBE firms. Twenty percent of the contractors gave the responsibility of telephone contact to the secretary. The other contractors interviewed rarely made telephone calls to solicit DBE firms.

TABLE 3 CRITERIA PRIME CONTRACTOR USE FOR CONTACTING DBE FIRMS

Criterion	Number of Prime Contractors	Percentage of Prime Contractors
Location of Project	13	52%
Past Work Experience with DBE	12	48%
Type of Work Available	9	36%
DBE's Past Interest in Quoting	3	12%
Size of Project	3	12%
DBE Shown on Planholders List	2	8%
Firm Listed in DBE Directory	2	8%
Work Capabilities of DBE	2	8%
Reliability of DBE	1	4%
Amount of DBE Goal	1	4%
Contact All (No Criteria)	2	8%
N/A (No Contacts Made)	1	4%

The three main difficulties of prime contractors that could be eased by WisDOT were identified from responses taken from several interview questions. First, prime contractors were asked to identify specific communication difficulties they were having with DBE firms. As shown in Table 4, prime contractors have the most difficulty in obtaining responses from contacts made to DBEs. Second, prime contractors were asked to rate the severity of five difficulties that were perceived to occur. As shown in Figure 3, prime contractors have difficulty receiving DBE response and believe too much effort is required of them to solicit quotes. Many prime contractors also responded that too few DBEs are available.Third, prime contractors were asked what types of information about DBEs they would like to have available. Only 16 percent of the prime contractors felt that the information currently provided was adequate.

The data collected suggest three main communication difficulties of prime contractors that could be directly eased by WisDOT. These difficulties are (a) lack of DBE response to contacts, (b) too much effort required to solicit quotes from DBE firms, and (c) limited accessibility of DBE project his-

TABLE 4 PRIME CONTRACTORS' MAIN DIFFICULTIES IN COMMUNICATING WITH DBE FIRMS

Difficulty	Number of Prime Contractors	Percentage of Prime Contractors
DBEs lack of response to contacts.	6	24%
DBEs lack of initiative in contacting prime.	5	20%
Doubt about DBEs' qualifications or experience.	4	16%
Unrealistic goals for number of DBEs available.	3	12%
Inadequate quotes from some DBEs.	3	12%
Making contact with DBEs (i.e. answering machines, address changes).	3	12%
Directory not properly kept up to date.	2	8%
Some DBEs unaware which prime contractors are bidding projects.	1	4%
No difficulties.	3	12%

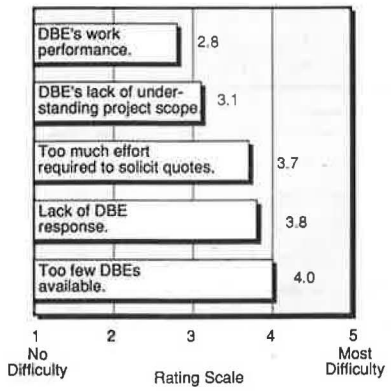

FIGURE 3 Average rating for difficulties that prime contractors experience.

tory and experience information. A discussion of these three concerns follows.

The most common difficulty mentioned by prime contractors was that DBEs do not respond to contacts made by their firm. The prime contractors spend an average of 10 hours attempting to contact the DBEs prior to each bid letting. On average, only one-third of the DBEs contacted actually submit complete bid quotes. Several DBEs disregard the notices they receive simply because they are already aware of who is bidding on upcoming projects of interest to them. Sixty-five percent of the 17 DBEs asked do receive a planholders list each month. This list identifies which contractors have purchased plans and specifications. Some DBEs return notices only to prime contractors with whom they are interested in working. A few DBEs routinely receive notices from prime contractors even though the work types and project locations are inappropriate.

In order to improve the rate of returned notices and receiving DBE quotes, two important steps should be taken. The first step is to discourage prime contractors from routinely mailing massive quantities of notices. The five prime contractors who appear to mass mail notifications to DBEs without regard to location or type of work have an average response rate of only 10 percent. DBEs receiving inappropriate notices and telephone messages may be discouraged from returning notices and telephone calls from more sincere prime contractors. The second step to improve the success rate is to improve prime contractors' awareness of which DBEs are most likely to participate in projects they are bidding. The response rate will improve if prime contractors target only DBEs in the appropriate location and with appropriate work capabilities.

Second, prime contractors were also interested in reducing the amount of work required to solicit DBE bids. Any changes, however, are limited by guidelines set forth for the entire DBE program. Good-faith effort obviously still must include prime contractors' efforts of writing and calling potential DBE firms. Minor efforts by WisDOT, however, may provide tools to make selecting relevant DBE firms and making contacts less difficult. Providing prime contractors with lists of DBE firms who are active or have obtained plans and specifications may decrease some of the time spent by prime contractors. Prime contractors who routinely make mass mailings, in most cases, probably do it to reduce their amount of work. These prime contractors may believe they would be punished for accidentally missing a DBE who is interested in the work. In generating and prioritizing the alternatives, the amount of effort saved by prime contractors was considered.

Third, prime contractors are generally interested in learning more about the DBEs that are certified. Most prime contractors would obviously like more information about their subcontractors (and competitors). Gaining knowledge about DBEs, however, appears to be more important for prime contractors because the percentage of failure is generally higher for many of the smaller, less experienced firms. Several prime contractors cited instances in which DBE firms were unable to adequately complete their projects. Despite these instances, WisDOT receives very few direct complaints about DBE project performance, indicating either that project-level difficulties are very rare or that WisDOT is usually not notified when they occur. Some prime contractors suggested that WisDOT provide subcontractor prequalification or capacity ratings. WisDOT need not have such a prequalification for DBE and non-DBE subcontractors in order to provide more information to prime contractors. (It was, however, suggested that prequalification should be further investigated as a means to reduce contractor failure. Many legal questions would need to be addressed before pursuing this suggestion.) Any information that assists the prime contractors in determining which DBEs may be interested or have the resources available to perform can be beneficial. Providing project histories, references, and equipment records on interested DBE firms would also help prime contractors. Of course, information on financial strength and capacity of DBEs would still not be available to prime contractors.

A fourth difficulty that was rated highly by prime contractors is that too few DBE firms are available. However, it appears that the WisDOT cannot directly ease this problem. Improving the communication process between prime contractors and DBE firms and addressing specific concerns (e.g., payment difficulties) of DBE firms will indirectly increase the participation of DBE firms on WisDOT projects.

A more complete description of the prime contractor interviews and the results is available elsewhere (*3*).

DBE FIRM INTERVIEW STRUCTURE AND RESULTS

Interviews were conducted with 20 DBE firms in the state of Wisconsin. Nine of the interviews were conducted in person, with the remainder conducted over the telephone. For inclusion in the underlying population the DBE firm had to meet the following criteria: (a) be located in the state of Wisconsin, (b) have participated in at least one WisDOT construction project in 1989, and (c) have been certified as a DBE firm in Wisconsin. Fifty-seven contractors met these criteria and were included for the random selection. The final sample, as requested by WisDOT personnel, was adjusted to include a more even distribution of work types than that generated by the random sample. This adjustment included replacing eight DBE contractors, mostly trucking firms, with six other DBE contractors. The adjusted sample containing 28 DBE firms

was then contacted for interviews. Twenty of these DBE firms participated in the interviews.

Each DBE firm was asked a set of 24 questions. After these questions were answered, each interview was opened for general discussion and comments. The interviews had four main objectives: (a) to obtain general information about the contractor's annual sales, technical expertise, and project types pursued; (b) to analyze the firm's practices of receiving information and responding to solicitations from prime contractors; (c) to identify and prioritize the difficulties that the DBE has in communicating and working with prime contractors; and (d) to receive suggestions for enhancing the communication with prime contractors.

The type of work and gross annual volume of each DBE firm was identified. As shown in Figure 4, the distribution of most of the types of work performed by the DBE firms in the sample closely matched the types in the underlying population. The average gross annual volume of all work, both public and private, performed by the DBE firms in the sample was $2.3 million.

A discussion of the most significant results of the DBE firm interviews follows. First, the current DBE practices of responding to prime contractors' invitations to bid are discussed. Second, the main difficulties of DBE firms are presented.

Most DBE firms (85 percent) have had instances in which they decided not to follow through on submitting a bid after a prime contractor had contacted them. As shown in Table 5, numerous reasons exist why DBEs may not respond with a quote to the prime contractor. The two most common reasons are that (a) the type of work is not appropriate for the DBE, and (b) the location of the project is not economically feasible for the DBE.

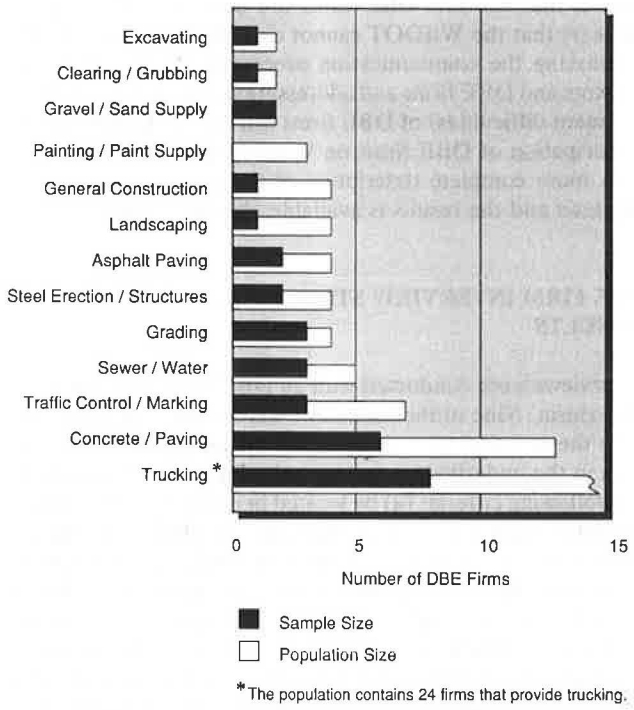

FIGURE 4 Number of DBE firms in sample, grouped by type of work.

TABLE 5 REASONS WHY DBE FIRMS SOMETIMES DO NOT FOLLOW THROUGH ON SUBMITTING QUOTES TO PRIME CONTRACTORS

Reason	Number of DBEs	Percentage of DBEs
Type of Work Not Appropriate	9	53%
Poor Location of Project	8	47%
Currently Too Overextended to Handle Job	4	24%
Poor Prior Relationship with Prime	3	18%
Couldn't Give a Competitive Price	3	18%
Not Enough Time to Bid	1	6%
Project Schedule Not Appropriate	1	6%
Project Too Large	1	6%

The DBE program appears to have evolved so well that most DBE firms have no difficulty obtaining the information they need. Most DBE firms subscribe to the *Western Builder* to obtain descriptions on upcoming WisDOT projects. They receive plenty of notices from prime contractors. None of the DBEs interviewed wanted more notification time than they currently receive. Sixty-five percent of the DBEs asked regularly receive a planholders list. This list provides names of contractors who have purchased plans and specifications from the WisDOT. This list is available twice a month from a private service. DBE firms often refer to the list to identify contractors who are interested in obtaining prime contracts on particular projects. The notifications sent by prime contractors appear not to be useful for the DBE firms receiving the planholders list. This may be one of the reasons why a few DBEs pay little attention to the notices and, thus, respond less to them. It also appears that some DBEs return only the notifications that are relevant to their type of work and location. Finally, most DBE firms interviewed take advantage of the DBE support services to answer questions and solve difficulties.

Most DBE firms interviewed believe they do not have much difficulty in communicating with prime contractors prior to the bid letting. DBE firms were asked during the interview to rate four perceived difficulties on a scale of 1 to 5. The average responses are shown in Figure 5. It appears from these data that DBE firms are usually able to obtain the

information necessary to prepare and submit their quotes prior to the bid letting. Also, the data suggest that disputes over quality of work is not a significant difficulty for DBE firms. Although the data indicate that disputes are infrequent, some of the firms interviewed stated that they have experienced major communication difficulties in this area.

The DBEs were asked to name their most significant difficulty in communicating and working with prime contractors. The majority of the responses were for difficulties associated with project execution and completion. The DBE firms' most significant difficulty appears to be the prime contractor's lack of advance notice for the DBE to mobilize to the job site. Because DBE firms generally have smaller work forces than non-DBE firms, advance notice appears to be more important. Another common difficulty is receiving prompt payment from prime contractors. DBE firms stated that they receive payment 1 to 1½ months, on average, after a portion of work is completed. WisDOT sometimes withholds payment to a prime contractor for any one of a variety of reasons. It appears that some prime contractors fail to notify all of their subcontractors when such payment is withheld.

A more complete description of the DBE firms interviews and their results can be found elsewhere (*3*).

ALTERNATIVES TO ENHANCE COMMUNICATION

From the results of this investigation, five possible alternatives have been developed to improve the communication between prime contractors and DBE firms in Wisconsin. These alternatives were developed to ease some of the difficulties that contractors identified. The following list of alternatives is presented in the order that the researchers believe the WisDOT should consider them for implementation.

1. Contractor Information Service (CIS). Currently, prime contractors are encouraged to obtain information about potential DBE firms directly from the DBE firms themselves. The CIS would provide certain types of information on DBEs to prime contractors requesting it. Information regarding history and capabilities would be kept in a computer file accessible to the DBE Support Service Office and the district WisDOT offices. The file would contain such nonfinancial information as project histories, equipment records, list of current projects, years in business, and references. Prime contractors would be encouraged to contact the CIS when they are trying to identify additional DBE firms to solicit for project bids.
2. Planholders List Expansion. Currently, a private service provides a complete list of planholders twice a month to contractors who order it. WisDOT does not actively distribute the list nor obtain copies of it. This alternative would increase the current mailing distribution of the planholders list to additional prime contractors and DBE firms. WisDOT would become more involved in promoting the availability of the planholders list. Planholders lists would become available at the DBE Support Service Office and district WisDOT offices. The list would be used as part of verifying good-faith effort by checking whether the prime contractor contacted the DBE firms on the planholders list.
3. Computerized Planning Guide (CPG). Current and upcoming project information would be programmed on a computer at the WisDOT office. Prime contractors and DBE firms would be able to access the information from their own personal computers. Information that could be contained in such a system includes names of planholders, project descriptions, bid tabulations, addenda to projects, a current DBE directory, upcoming project schedule, and advertisements for soliciting DBEs. The CPG is similar to a system already implemented by the Montana and Virginia DOTs.
4. Active DBE Listing. The DBE directory would identify which DBEs have been actively pursuing work on WisDOT projects. DBEs who either received subcontracts or furnished project bids to prime contractors within the past 2 years would receive an "active" status in the DBE directory. The active status would include not only the DBE firms who successfully received contracts, but also the firms who unsuccessfully submitted quotes. At time of recertification, WisDOT would need to ask DBE firms whether they had unsuccessful attempts at receiving subcontracts on WisDOT projects.
5. Pre-Bid Automated Response System (PARS). By using a touch-tone telephone, contractors would receive information from a computer-generated voice system. PARS would be part of the bid letting touch-tone system that WisDOT is currently considering. Both prime contractors and DBE firms would first contact the system to indicate their interest in specific upcoming projects. Prime contractors and DBE firms would access the system later to identify which contractors have indicated an interest in projects they wish to pursue. PARS could also include pre-bid information such as project descriptions, lists of planholders, and an upcoming schedule of future projects available for bid.

CONCLUSIONS

Of the five alternatives presented, the researchers recommended that only the CIS (Alternative 1) and the planholders list expansion (Alternative 2) be implemented. The CIS and the planholders list expansion appear to be the most cost-effective alternatives for enhancing the communication between prime contractors and DBE firms. First, many prime contractors appear to want more readily available information about DBE firms. The CIS would encourage prime contractors to contact the DBE Support Services Office. As more prime contractors contact the CIS, the more informed the DBE Support Service Office would be in suggesting names of DBE contractors seeking work. Second, the planholders list expansion would increase the distribution and usefulness of the current planholders list. The planholders list has been found to be an important link in identifying prime contractors and subcontractors. The list should be made available to all contractors.

Although the researchers do not recommend the other three alternatives, their feasibility may still be further evaluated. The CPG would not directly enhance the communication between prime contractors and DBE firms, but it still would provide essential information to both parties. The active DBE listing would not ease much of the prime contractors' efforts to solicit DBE firms, but it would require WisDOT to be more aware of which DBE firms are more active. Finally, the

PARS appears not to have much acceptance among the contractors interviewed. If, however, WisDOT implements the bid letting touch-tone system, some features of PARS may be included.

Before WisDOT adopts any of the recommendations, a comprehensive analysis of the implementation issues should be performed. Such an analysis is currently being considered by WisDOT personnel.

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