IMPROVING THE EFFECTIVENESS OF PARTNERING

Final Report

SPR PROJECT # 344

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STATE PLANNING AND RESEARCH PROJECT #344

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16. Abstract

The objectives of the research were to: (1) assess the current state of the Oregon Department of Transportation's (ODOT) partnering program; (2) examine ways for improving current processes; and (3) recommend process improvements and possible new methods and practices that could be used to increase the effectiveness of partnering. The research consisted of a literature review, survey of state Departments of Transportation, a survey of ODOT and contractor personnel, and case studies of 12 recently completed ODOT partnered projects.

The survey of ODOT and contractor personnel showed that the majority of respondents feel that partnering improves communication, trust, and teamwork. Most also believe the goals and values created in the initial partnering workshop are carried out in the field. The survey also showed that contractors, more so than ODOT personnel, feel that partnering helps improve quality, decision making and schedule adherence, and reduces the size and number of claims. The case studies of seven successfully partnered projects revealed specific critical success factors associated with the successful projects. Conversely, the case studies of five unsuccessfully partnered projects exposed challenges inhibiting partnering success.

Based on the research findings from the literature review, surveys and case studies, recommendations were made to improve ODOT's program. One of the recommendations included additional training for partnering participants, to be jointly sponsored by ODOT and the Associated General Contractors of Oregon. Another recommendation called for ongoing facilitation throughout a partnered project.

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
In	inches	25.4	millimeters	mm
Ft	feet	0.305	meters	m
Yd	yards	0.914	meters	m
Mi	miles	1.61	kilometers	km
		AREA		
In^2	square inches	645.2	millimeters squared	mm^2
Ft^2	square feet	0.093	meters squared	m^2
Yd^2	square yards	0.836	meters squared	m^2
Ac	acres	0.405	hectares	ha
Mi^2	square miles	2.59	kilometers squared	km^2
		VOLUME		
Fl oz	fluid ounces	29.57	milliliters	mL
Gal	gallons	3.785	liters	L
Ft^3	cubic feet	0.028	meters cubed	m^3
Yd^3	cubic yards	0.765	meters cubed	m^3
NOTE: Volumes greater than 1000 L shall be shown in m^3.				
		MASS		
Oz	ounces	28.35	grams	g
Lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5(F-32)/9	Celsius temperature	°C

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	millimeters squared	0.0016	square inches	in^2
m^2	meters squared	10.764	square feet	ft^2
ha	hectares	2.47	acres	ac
km^2	kilometers squared	0.386	square miles	mi^2
		VOLUME		
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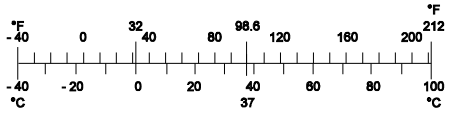
L	liters	0.264	gallons	gal
m^3	meters cubed	35.315	cubic feet	ft^3
m^3	meters cubed	1.308	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams	1.102	short tons (2000 lb)	T
		TEMPERATURE (exact)		
°C	Celsius temperature	1.8 + 32	Fahrenheit	°F



* SI is the symbol for the International System of Measurement

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DISCLAIMER

IMPROVING THE EFFECTIVENESS OF PARTNERING

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IMPROVING THE EFFECTIVENESS OF PARTNERING

EXECUTIVE SUMMARY

The Oregon Department of Transportation (ODOT) has been using partnering more frequently on its contracts. Partnering is an important tool that can enhance all aspects of a construction project. However, as with many collaborative approaches, there are inherent barriers, which inhibit "successful" partnering. In 2000, the *Oregon Partnership for Highway Quality* established a *Partnering Work Group* to redefine and revitalize partnering used on ODOT contracts. The Work Group developed requirements for a research project that would: (1) assess the current state of ODOT's partnering program; (2) examine ways for improving current processes; and (3) recommend process improvements and possible new methods and practices that could be used to increase the effectiveness of partnering.

Literature Review

A review of the literature examined recent research findings about construction contract partnering. Studies of partnering programs in Departments of Transportation (DOT's) in Ohio and Texas, as well as the results of a national survey of DOT's, were evaluated to uncover information potentially applicable to ODOT's study. Also reviewed were three other studies relating to partnering in the construction industry as a whole. One of these studies identified critical success factors for partnering that served as a baseline for the researchers in developing critical success factors specific to ODOT projects.

Survey of Other State DOT's

The researchers surveyed state DOT's to obtain information about partnering in other states. Twenty-four states responded; 22 had partnering programs in place. Follow-up interviews were conducted with four states who responded to the survey. The interviews with the Arizona, Texas, and Kansas DOT's, as well as with the Maryland State Highway Administration helped provide ideas/methods that could be applied by ODOT for improving its program such as training, dispute resolution, and program recognition.

Survey of ODOT Staff and Contractors

To help assess the condition of ODOT's program, the University of Oregon Survey Research Laboratory surveyed 132 ODOT personnel and 42 contractors who had previous experience with partnering.

Of the ODOT staff, 93% (124 of 132) had partnered five or fewer times, compared to 71% (30 of 42) of the contractors. When asked: "How often are the goals and values created in the workshop actually carried out in the field?" 77% of the ODOT respondents said either "always," "most of the time" or "sometimes," compared to 88% of the contractors.

The majority of ODOT and contractor respondents felt that partnering improves communication, trust, and teamwork. Contractors, to a much greater degree, believed partnering improves the quality of the finished work, enhances decision making, improves the ability to meet schedules, and reduces the number and size of claims. A variety of issues were cited when respondents were asked: "What aspects of partnering presented challenges?" These included: (1) dispute conflict resolution, (2) overcoming animosity/differences; (3) commitment to partnering; (4) negotiations/money matters; (5) communication; (6) honesty/trust; and (7) false expectations of partnering.

Case Studies of Partnering on ODOT Projects

Twelve projects were selected for detailed case study to investigate the characteristics of both successful and unsuccessful partnering efforts. These 12 projects spanned the range from very successful to very unsuccessful. For each case study, key personnel on each of the 12 projects were interviewed, including, at minimum, the ODOT project manager and his/her contractor counterpart. Each person interviewed also completed a 41-question, project-specific survey.

Survey responses from all participants were evaluated to determine what attributes of partnering correlate with partnering success. A "Partnering Health Index" (PHI) was developed, which can be used as a tool on future partnered projects to periodically review partnering health.

The interview results were studied to identify common threads and problem areas. The following summarizes critical success factors (and challenges to success) repeatedly addressed by the participants during the interviews.

- Project staffing stability
- Fundamental engineering design and specification quality
- Incomplete prerequisite work
- Partnership monitoring, management and quality
- Utilizing third party neutrals
- Adequate resources
- Commitment to partnering concepts
- Respect and courtesy
- Project visibility and attention
- Effective partnering workshops and facilitation

The interviews showed that partnering typically flourished when no major issues came up on a project, or when the early issues were small and manageable, and were followed only later by more complex and challenging ones. This seemed to allow time for partners to build trust and establish the partnership.

Factors to Consider When Making Decisions About When to Partner

A "one size fits all" decision making process, such as a multi-stage decision tree or multi-criteria decision model is not considered necessary in order to make sensible decisions about when to formally partner. Instead of developing a quantitative decision making process, the researchers

opted for an approach that utilized engineering judgment, based on careful consideration of a number of pertinent factors. Seven factors were identified for the decision-maker to consider when choosing whether or not to formally partner. These include:

- Project size;
- Project complexity;
- Average daily traffic;
- Potential cost growth;
- Project schedule and duration;
- Community and transportation system interest; and
- Coordination between multiple parties.

Conclusions

Strengths of ODOT's Partnering

1. ODOT's partnering efforts helped deliver some very successful projects.
2. The majority of ODOT/contractor participants feel that partnering improves communication, trust and teamwork on a project.
3. Most ODOT/contractor participants believe that the goals and values created in the partnering workshop are carried out in the field.
4. The following aspects of partnering are reported to be working well:
    a. Getting to know partners.
    b. Developing channels of communication.
    c. Problem solving/dispute resolution.

Weaknesses in ODOT's Partnering

1. There is no education and training program to advance partnering among the ODOT and contractor community.
2. Although ODOT's partnering program allows for facilitation throughout the project, the service is seldom utilized.
3. A slight majority of partnering participants have seen partnering used to advance one side's position at the expense of the other's. There is no obvious, effective way to deal with individuals or organizations that betray partnering trust.

Barriers to Success

1. Past negative experiences with partnering for some make it difficult to approach partnering on new projects.
2. ODOT personnel do not view partnering as favorably as do contractor personnel in terms of improving quality, enhancing decision making, meeting schedules, and reducing the number and size of claims.
3. Inadequate resources for ODOT or for the contractor can strain projects beyond the point where even very effective partnering can help.

Recommendations

There are a variety of recommendations based on the research findings and conclusions, including:

1. ODOT senior management should continue to show strong support for partnering.
2. Partnering principles should be practiced on all ODOT projects.
3. Partnering project selection criteria presented in this report should be utilized to help determine what projects are selected for formal partnering. In addition, ODOT should continue to partner on projects where formal partnering is requested by the contractor.
4. Formal (full-strength) partnering on each project should include the following:
    a. Provisions in the ODOT facilitator contract to include services for the initial partnering workshop, for on-going facilitation, and for a close-out "lessons learned" session;
    b. A core project team and an executive oversight team;
    c. An initial partnering workshop structured to allow the project core team adequate time (4-8 hours) to discuss critical project-specific issues;
    d. Continuous monitoring and facilitation of partnering throughout the project life; and
    e. A mechanism to support timely issue resolution available to the project team.
5. Partnering-specific education and training programs should be established for ODOT and contractors who participate in partnering agreements.
6. ODOT should record in its contract database when partnering is used, and further explore ways to measure the effectiveness of partnering.

1.0 INTRODUCTION

1.1 PROBLEM STATEMENT

The Partnering Subcommittee of AASHTO's Standing Committee on Quality defines partnering as follows: "Partnering is a process of collaborative teamwork to achieve measurable results through agreements and productive relationships." The Maryland State Highway Administration (MSHA) adds that partnering is "A process based on trust and an open, honest attitude in which all participants in a project recognize both common and individual objectives and work to achieve those objectives through improved communication and cooperation." *(Maryland 2002)*

The Oregon Department of Transportation (ODOT) has been using formal partnering on high risk projects since the early 1990's. The stated objective of formal partnering with ODOT is:

> "*To establish an improved working relationship between the owner and the contractor, (and other entities associated with the construction project) that facilitates open, honest, and timely communication necessary to obtain the best possible completion of an individual construction project*" (*Pappe 2001*)

ODOT Contract Plans and Specifications establish:

- What the contract work includes;
- The required quality of the work;
- The completion date of the contract work;
- Any contract restrictions;
- How the work is measured and paid for;
- The process for incorporating changes to the contract work;
- The procedures for resolving disputes and disagreements; and
- How the contractor can pursue claims against the owner.

Partnering does not change any of the contract requirements. A good working relationship allows the parties to resolve contract issues or disputes in a proactive, open and timely manner which provides the best solutions for a project. In addition, a good working relationship can contribute to enhanced safety, lower costs for both the owner and the contractor, and fewer impacts on the traveling public and local communities.

Intuitively, most people involved with partnering in the construction community, including ODOT employees and contractors, believe that it can be beneficial. Those involved recognize that partnering is an important tool that can enhance all aspects of a construction project. However, partnering requires additional commitment and effort to implement. Further, as with many collaborative approaches, there are inherent barriers which inhibit "successful" partnering arrangements. To date, other than anecdotal experiences, ODOT and its prospective partners

have had little quantitative or qualitative data that would demonstrate the benefits of a construction partnership.

As a result of the uncertainty with the partnering process, the *Oregon Partnership for Highway Quality* established a *Partnering Work Group* in 2000 to redefine and revitalize partnering in the construction phase of ODOT projects. In order to carry out this responsibility, *the Partnering Work Group* undertook this research project. Specifically the research would: (1) assess the current state of ODOT's partnering program; (2) examine ways for improving current processes; and (3) recommend process improvements and possible new methods and practices that could be used to increase the effectiveness of partnering.

1.2 OBJECTIVES AND RESEARCH METHODOLOGY

The overall objective of the research was to provide a comprehensive study of ODOT's partnering program that will lead to process improvements and enhanced partnering arrangements on future projects. The following tasks were identified by the *Partnering Work Group* as specific research objectives:

1. Review ODOT's partnering procedures and examine partnering arrangements used by state Departments of Transportation (DOT's) and other appropriate public agencies.
2. Survey ODOT Project Manager staffs, and contractors to determine their perceptions, and what they value as important in a partnering arrangement.
3. Select and examine 12 recently completed projects that were partnered to find out about the attributes of good and bad partnering.
4. Identify the specific concerns, barriers, and other problems limiting the effectiveness of partnering.
5. Define the characteristics of a successful partnering arrangement and develop recommendations for process improvements and possible new partnering tools.
6. Develop a framework for making decisions about selecting projects as formal partnering candidates.
7. Create an implementation plan to advance the research recommendations.

2.0 LITERATURE REVIEW

The literature review examined recent research on construction contract partnering. Potential sources of information included published articles, agency reports, and public releases of information from ongoing or completed partnering related studies. The results of the literature review are presented in this chapter in two sections. The first section is a summary of previous documented research completed in the last ten years that examined partnering in State DOT's. The second section in this chapter provides a summary of several pertinent studies that considered aspects of partnering from a construction industry-wide perspective.

2.1 PARTNERING EFFORTS AT STATE DEPARTMENTS OF TRANSPORTATION

2.1.1 Evaluation of Partnering on Ohio DOT Projects

Chapin (*1994*) reviewed the Ohio DOT's partnering program. The research included:

- A survey of Ohio DOT and contractor personnel;
- An analysis of contract data; and
- A national survey of other DOT's.

In the Ohio DOT and contractor mail-out/mail-in survey, 112 responses to 209 surveys were received; 38 from contractors and 74 from DOT employees. The survey showed that the pre-project partnering workshop was moderately successful. Most of the respondents felt the workshops did not adequately address a partnering evaluation system. The survey also found communication between parties was somewhat better because of partnering. Most respondents believed that partnering resulted in fair pricing of extra work and resulted in slight improvements in quality and efficiency, as well as safety and convenience to the public. Overall, partnering was rated 5.2 out of 7 in terms of its effect on the project; with "1" being a very negative effect; "4" having no effect; and "7" representing a very positive effect.

In the state DOT survey, responses were received from 42 states. Twenty-one states used project dollar size as one criterion for using partnering. Other reported criteria included complexity, duration and contractor's preferences. Claims reduction was the most frequent reason given as a motivator to partner. The survey results also showed only 6 of the 42 states had a system of tracking savings due to partnering.

Chapin also analyzed 13 previous-partnered and 123 non-partnered contracts. He found the construction time on partnered contracts averaged 18 more days than non-partnered contracts, although cost overruns were 3% less on partnered projects.

2.1.2 Measuring the Benefits of Partnering

Baker (*1996*) reported on the impacts in measuring the benefits of construction partnering. He surveyed 46 state DOT's in August 1994. Baker asked state DOT's questions about the extent of their partnering, partnering measurement efforts, and the level of satisfaction with partnering. Baker reported that 96% of the respondents have used partnering; 83% have formal programs. Seventy-four percent identified at least one problem associated with partnering. The problem cited most often was the difficulty in measuring specific partnering benefits. Further, only a third of the responding states measured the results of partnering (e.g., reduced project cost, fewer change orders, etc.). Baker concluded that those DOT's that measure the impacts of partnering were also in a better position to identify specific benefits of the .program.

2.1.3 Partnered Project Performance in Texas DOT

Grajek and others (*2000*) examined partnering by the Texas DOT (TxDOT) in a 1995 study. The study included an analysis of 54 partnered and 107 non-partnered contracts. The researchers analyzed net cost change, change order cost, schedule change, liquidated damages, and claims. They found statistically significant differences in contract duration and claims between partnered and non-partnered contracts. Partnered contracts showed a 4% average schedule savings above the non-partnered contracts. Further, on the partnered sample of 54 projects, there were zero claims.

The researchers also surveyed 900 contractor and TxDOT employees who had participated in past partnering efforts. The survey results showed that 85% of contractor and 65% of DOT staff believed partnering enhanced business relationships. Respondents felt that the most beneficial aspects of the partnering workshop were identification of problem solving techniques, and issue escalation procedures. The survey also identified the top four benefits of partnering including:

- Better communication;
- Better teamwork;
- Increased trust; and
- Stronger relationships.

Alternatively, most of those surveyed (70%) did not know about follow-up or project close-out workshops, or that they were available as an option. Based on the contract data analysis, and survey results, the authors concluded that the partnering processes within the TxDOT can be used to improve project delivery. Partnering outcomes included improved schedule adherence, reduced claims and enhanced communications between DOT and contractor personnel.

2.1.4 Evaluation of TxDOT Partnering Plus Program

Gransberg and others *(1998)* evaluated the impact of past partnering efforts and developed a decision model to determine whether to partner on future construction projects. Their research included examining a 50/50 split (partnered/non-partnered) of 408 past TxDOT contracts. The researchers analyzed contract parameters such as cost growth, time growth, and liquidated damages to determine if there were statistical differences between the partnered and non-

partnered data sets. They determined that there were more change orders on partnered contracts, but the cost per change order was less than the cost per change order on non-partnered contracts. The researchers also found that partnered projects, $5 million or larger, outperformed non-partnered projects in these categories:

- Cost growth as a percentage of the total cost;
- Number of change orders;
- Average cost growth (in $) per change order; and
- Average cost growth (as a %) per change order.

The research also included surveys of 190 TxDOT and 43 contractor personnel. The survey results were used to help develop a methodology to use when making decisions about whether to partner. Their decision model recommends partnering on a project if one or more of the following criteria are met:

- There are new relationships between the DOT personnel and the contractor's staff. In other words, the DOT staff and the contractor have not worked together before.
- The contract value exceeds $5 million;
- The project spans two or more construction seasons;
- The project is complex, and is located in an urban area.

The researchers also recommended that the TxDOT drop the "formal" and "informal" designations of partnering, and replace them with a single designation of "partnered." A partnered project as defined by Gransberg, is one "where the project's nature is such that investing the time to specifically focus on TxDOT-contractor relationships is deemed to be worthwhile and will likely accrue benefits" (*Gransberg et al. 1998*). Thus, what makes partnering unique is the concept of conducting a formal meeting in order to specifically focus on building relationships for project success.

2.2 PARTNERING IN THE CONSTRUCTION INDUSTRY

2.2.1 Establishment of Critical Success Factors for Construction Partnering

Cheng and others (*2000*) reviewed previous published construction and project management related literature to identify critical success factors (CSFs) to use in partnering. They also developed a framework to identify CSFs necessary when implementing partnering on construction projects. The framework suggests that partnering can be successful if the appropriate CSFs are employed. The authors categorized CSFs as either management skills or critical contextual characteristics. Examples of management skills included effective communication and conflict resolution. Critical contextual characteristics are those that are needed to establish a successful long-term partnering relationship. These included:

- Adequate resources;
- Management support;
- Mutual trust;
- Long-term commitment;

- Coordination; and
- Creativity.

Cheng and others also stressed that individual performance measures have to be developed for CSFs in order to evaluate partnering effectiveness. They suggested using subjective measures, such as perceived satisfaction of partners' expectations, and objective measures, such as cost and schedule variation. The authors made several recommendations regarding the formation of the partnering team. They suggested holding regular partnering meetings focused on continuous improvement in processes and procedures by "introducing new models, approaches and methods." They also recommended using a benchmarking technique as a way to assess partnering best practices.

2.2.2 Partnering Measures

Crane and others *(1999)* surveyed companies engaged in long-term or project-specific partnering relationships to identify different approaches to partnering. Based on the survey results, they selected 21 companies which had previous success with construction partnering for detailed interviews. The authors used the information obtained from the interviews to identify measures used on partnered projects and the procedures followed in developing these measurement systems. They defined an effective measurement system as one that contains two basic elements, a performance baseline and a means for determining actual values. The authors described three different types of measures:

- Result – Hard measures based on performance, e.g., cost and schedule indexes.
- Process – Measures used to track in-progress activities such as schedule adherence.
- Relationship – Subjective measures used to track the effectiveness of the partnering team, e.g., communication, teamwork, accomplishment of objectives.

They noted that relationship measures assess the "health" of the partnering team, and for that reason, form the foundation for the partnering processes to be developed. The authors asserted that if the partnering processes are effective, desirable results are likely to be achieved. They also emphasized that in order to develop useful measures, partnering participants need to determine short- and long-term goals and then integrate them into the partnering environment.

2.2.3 Partnering: Why Do Project Owner-Contractor Relationships Change?

Drexler and Lawson *(2000)* utilized data collected from 276 construction projects to examine the stability in the owner-contractor relationship. Specifically, they sought to answer two questions:

- How stable is the nature of the owner-contractor working relationship; and
- What factors contribute to changes in the nature of the relationship?

The authors sent out 1,000 surveys to randomly selected members of the Project Management Institute, and received responses from 276. Those who responded based their answers on experiences with a recently completed construction project. The survey questions focused on four categories of owner-contractor relationships that were defined for the respondent:

1. Adversarial – Participants perceive themselves as adversaries with each party pursuing their own concerns at the other party's expense.
2. Guarded adversarial – Participants cooperate within the boundaries of the contract.
3. Informal partners – Participants attempt to sustain a cooperative relationship that goes beyond the boundaries of the contract.
4. Project partners – Participants treat each other as equal partners with a common set of goals and objectives.

Fifty-four (20%) respondents said at the beginning of a project, their relationship was as formal partners. For the highest percentage of respondents (39%), the relationship at the beginning of a project was categorized as "guarded adversarial." The survey asked if the relationships had changed by the end of the project. A fundamental change in their working relationship, either positive or negative, was reported by 58%. Projects that began as formal partnerships were the most stable, with 69% ending as they began ("*project partners*"). Guarded adversarial was the least stable; only 30% of those which started with this kind of relationship ended this way.

The authors examined why the relationships changed, either improving or declining. The most frequently mentioned responses given for declining relationships were: (1)unclear contracts and resulting litigation; and (2) scope or schedule changes. Alternatively, when relationships improved it was because of greater trust, shared goals, and/or positive relationships. Based on the results of the survey, the authors offered several recommendations for sustaining and improving contractor-owner partnerships. They included:

- The scope and objectives of the partnering relationship need to be clearly defined at the start. A foundation of teamwork prior to the beginning of the project is essential.
- Both parties need to develop a process or structure for managing unanticipated problems.
- Consideration should be given to providing interpersonal skills training to personnel who have weaknesses in these skills.
- Both parties need to be empathetic and sensitive to each other's concerns during the course of the project.

3.0 SURVEY OF OTHER STATE TRANSPORTATION DEPTS.

Other state DOT's were surveyed using an internet-based questionnaire to obtain information about their use of partnering programs. Completed surveys were e-mailed back to ODOT's Research Group. A total of 24 states responded, with 22 indicating that they employ partnering on at least some contracts (Figure 3.1). Key findings from the survey are presented in this section. The complete results for the survey including the survey questionnaire are available from ODOT's Research Group.

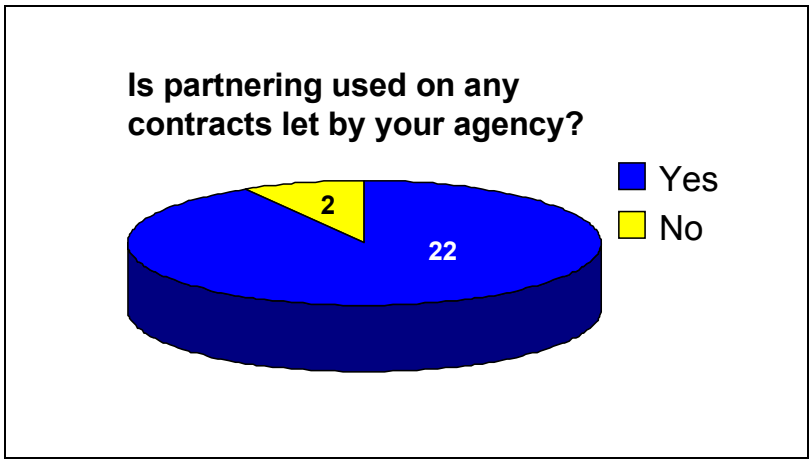


Figure 3.1: Number of DOT's Contacted That Are Using Partnering

Based on their answers, four of the states that responded to the survey were contacted for follow-up interviews. Interviews were conducted with DOT representatives from Arizona, Texas, Kansas and Maryland. The results of the follow-up interviews are discussed in Section 3.2.

3.1 INTERNET-BASED SURVEY RESULTS

The 22 state DOT's that use partnering were questioned about their program and processes.

3.1.1 Formal Criteria to Make Decisions about When to Partner.

Sixteen of the states reported using formal criteria for making decisions about whether partnering should be used on a specific project. Those states with formal criteria were asked to describe the criteria that are used. Listed below are some the quoted responses:

"We generally partner all projects but the length of workshop, type of facilitator (internal or contracted) is determined by using a checklist. Small dollar amount and not complex projects follow a more informal process and partnering principles and tools are introduced through the pre-construction meeting."

"On all contracts over $1.0 million. Optional at the request of the contractor. For projects over $25 million, partnering is still optional at the request of the contractor, however, a mandatory "Training in Partnering Concepts" session is given to both the State and the contractor."

"It is mandatory to Partner on our Detail-Build Projects. For all others, a formal contract letter invites respective contractors to join in our Partnering initiative."

"A project's dollar value is not always what prompts us to partner. A $1 million resurfacing project on a rural road would most likely not be partnered. However, a similar resurfacing project in a suburban or urban area may very well be partnered. We look at the projects location, its complexity and scope, as well as local interfaces and political sensitivity. We also will consider partnering if past experiences w/ a particular community of contractor have been somewhat unproductive."

3.1.2 Partnering Workshop

All 22 of the state DOT's questioned said that they conducted a formal partnering workshop prior to the start of the project. Of the 22 agencies, most used an outside person to facilitate these workshops. Figure 3.2 shows what kinds of personnel are used by other states to facilitate partnering workshops.

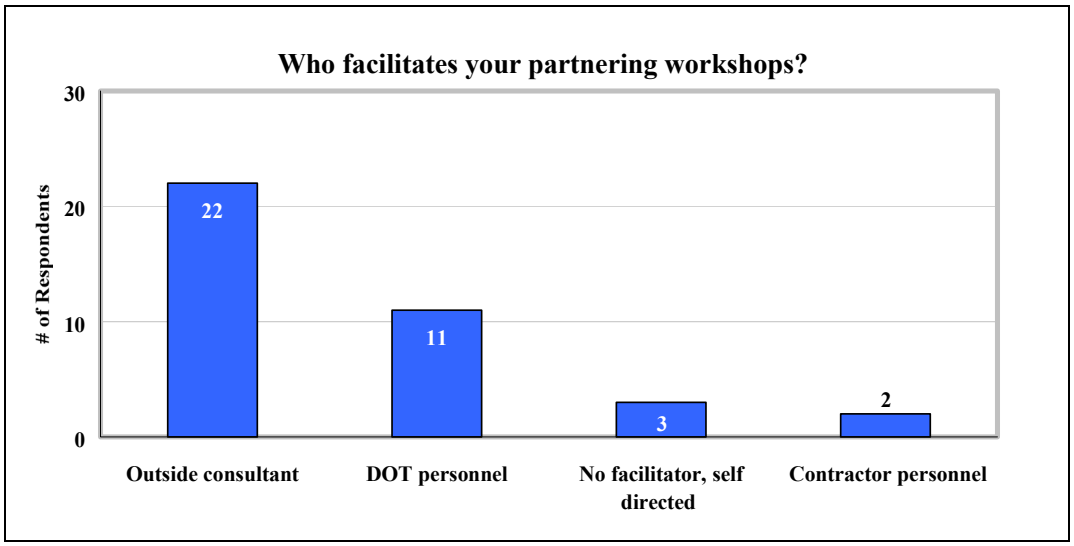


Figure 3.2: Partnering Facilitators in Other States

State DOT's were then asked about who participated in the partnering workshops. Table 3.1 shows the distribution of responses from the 22 states. Most of the states share common viewpoints about which people need to attend the workshop. Sixteen answers were classified in the "Other" category. Those listed in the "Other" category included: Department of Environmental Protection, DOT Environmental Staff, Utilities, Railroad, Chamber of Commerce, and local community representatives.

Table 3.1: Participants at Partnering Workshops

Who are participants at the partnering workshop? (n=22)	
DOT Construction Project Manager	22
Prime Contractor Superintendent	22
Prime Contractor Project Engineer	21
Facilitator	20
FHWA	20
Subcontractors	20
Utilities	19
Local Agencies	18
Consultant Project Designers	18
Prime Contractor Foreman	18
Other	16
DOT Project Designers	17
Prime Contractor Owner	17
Prime Contractor Skilled Laborer	3

3.1.3 What Makes Partnering Successful?

State DOT's were asked about techniques that are used by their agency to help make partnering successful. The most frequent answer was "regularly scheduled partnering meetings." Some states hold monthly partnering meetings, others at least quarterly.

The California Department of Transportation (Caltrans) produced a partnering video, which is used to train field personnel and crews on the reasons for, and the benefits of partnering.

Kansas Department of Transportation (KDOT) described their joint committee with the Kansas Contractor Association (KCA). The KCA/KDOT Partnering Committee plays a significant role in making their program successful. Maryland SHA also has a Partnering Subcommittee that is made up of MSHA, contractor, and design consultant representatives. They meet monthly to provide guidance on partnering initiatives to the MSHA and contractor staff.

In its Construction Manual, Arizona Department of Transportation (ADOT) includes partnering principles, and descriptions of what it means to be a resident engineer, inspector, etc., in a partnering environment. ADOT also has a Partnering Evaluation Program (PEP) that provides a tool for project team members to evaluate partnering-related goals and give feedback. There are 5 standard goals for each project relating to:

- Quality;
- Communication;
- Issue Resolution;
- Teamwork/Relationships; and
- Schedule.

Each team on an ADOT project can customize the PEP to add other goals. A monthly report is produced that shows project teams who are having difficulty, and those who are doing well.

3.1.4 Benefits of Partnering

State DOT's were given a list of potential benefits of partnering and asked to choose the ones that were actually happening at their agency because of partnering. The results are shown in Table 3.2. The benefits for most states relate to relationship factors such as communication, teamwork, trust, etc. Objectively measured benefits such as fewer change orders, reduced change order costs, and lower construction costs were regarded by very few states as benefits attributed to partnering.

Table 3.2: Benefits of Partnering

Based on your experience with partnering, what are the benefits that your agency has experienced by partnering? (n=22)	
Better communication	22
Better teamwork	19
Lower level decision making	19
Increased trust	18
Stronger relationships	17
Improved dispute res.	16
Fewer claims	16
Better decisions	15
Earlier contract completions	13
Higher quality	10
Less change orders	8
Reduced construction costs	7
Other	6
Lower change order costs	4

In a follow-on question, State DOT's were asked if their agency has a program in place that can measure the benefits of partnering. Only five states (Arizona, California, Indiana, Maryland, and Wisconsin) have programs in place.

1. **Arizona** - ADOT measures partnering in terms of the following parameters.
   - Number of contract days (estimated vs. actual);
   - Construction engineering costs;
   - Added construction costs. Their goal is 10% - contingency + payment incentives above the award amount.
   - Cost of partnering (contracted facilitator, facilities/food, cost of the partnering office) and compare to the construction budget. Currently, their cost is less than ½ of 1%.

2. **California** – In addition to looking at on-time delivery within budget, Caltrans uses the claims amount and the number of arbitrations as measures.

3. **Indiana** – The Indiana Department of Transportation (IDOT) at a partnering close-out meeting through their facilitator, prepares a listing of the successes in meeting the objectives, as well as pending claims or litigation, and other pertinent measurements.

4. **Maryland** – The MSHA measures how the partnering team is functioning using a rating form that partnering teams fill out on a monthly basis. The rating form includes the following elements:

   - Communication
   - Teamwork
   - Cooperation and Respect
   - Issue Resolution
   - Job Progress
   - Safety
   - Material Clearance
   - Maintenance of Traffic
   - Erosion and Sediment Control

5. **Wisconsin** – The Wisconsin Department of Transportation (WisDOT) uses various performance measures on all projects. Thus, partnered projects can be compared with non-partnered ones in terms of completion times, final contract costs, project delivery costs, and construction quality.

3.1.5 Causes of Unsuccessful Partnering

States were asked to reflect on their experiences with unsuccessful partnering, and to provide reasons why in those instances, partnering did not work. The responses focused on several common themes. These included:

- The lack of commitment among one or both parties to partner;
- No monitoring of the partnering processes during the course of the construction project; and
- The lack of support and participation on the part of senior management.

3.1.6 Additional Training for the Partnering Team

The survey also asked about the training programs that are used to supplement partnering. Five of the 22 states provide partnering team members with additional training, while 17 do not. Four of the states provide extensive training. Theses states are:

1. **Arizona** –ADOT developed an "Introduction to Partnering" class that is mandatory for all ADOT managers. There is also a class developed for the field level called "How To Make Partnering Work in the Field", targeted to ADOT and contractor field employees who are going to work together on a project.

2. **California** –Caltrans has developed a new specification which will allow joint training in partnering concepts on projects where partnering is specified. Partnering is normally specified on larger, more complex projects. If partnering is specified , the opportunity to

attend a joint training session on partnering concepts and leadership is offered to the project team, two to three weeks before their partnering workshop.

3. **Kansas** – In Kansas, partnering-related training has been sponsored by the KCA/KDOT Joint Partnering Committee. Since 1991, the Joint Partnering Committee has conducted a number of training sessions each year for nearly all KDOT personnel and all levels of supervisory personnel for the contractor. The one-day sessions introduced participants to the concept of partnering; showed examples of partnering efforts used elsewhere; and provided examples of situations where partnering could be used.

4. **Maryland** – The MSHA offers two different training opportunities. The "Project Management and Partnering Leadership Workshop" is conducted by Larry Bonine's Pinnacle Leadership Group. This two-day workshop is attended by representatives from the MSHA, contractor, and the design consultant. The second training opportunity is MSHA's "Meeting Bootcamp." It is also a two-day workshop that provides MSHA's Project Engineers with skills and tools to plan, conduct, and evaluate partnering meetings.

3.2 FOLLOW-UP WITH SIGNIFICANT STATES

The Partnering Coordinators for ADOT (*Murdough 2001*), KDOT (*Weinrich 2001*), MSHA (*Seering 2001*), and TxDOT (*Jennings 2001*) were contacted for follow-up interviews. These state coordinators were asked about:

- Differences between formal and informal partnering;
- Partnering workshops;
- Training for contractor and DOT personnel;
- Relationships with the local Associated General Contractors (AGC) chapter; and
- Strengths and unique aspects of their programs.

The following are the key findings from these follow-up interviews.

3.2.1 Differences between Formal and Informal Partnering

ADOT – ADOT generally partners all projects, but the length of workshop and type of facilitator (internal or contracted) is determined using a checklist. Low cost and straightforward projects follow a more informal process, and on these, partnering principles and tools are introduced through the pre-construction meeting.

KDOT – KDOT formally partners on about 12 projects per year. However, KDOT uses partnering techniques on all projects.

MSHA - It is mandatory for the MSHA to partner on *Detail-Build* (similar to design-build) projects. For all others, after the contract has been awarded, the District Engineer asks the contractor if they want to partner. If the contractor expresses a desire to do so, a formal contract letter is issued inviting the contractor to partner.

TxDOT - In 1996, Partnering was mandatory under TxDOT's *Partnering Plus* program. There were two alternatives available:

- Formally partner the project utilizing a designated facilitator.
- Informally partner the project using project personnel to facilitate.

In 1998, that policy was changed, and partnering became voluntary. TxDOT does not strictly follow the partnering decision model created by Gransberg and others (*1998*). Instead, it uses the criteria as a guide in making decisions about partnering. TxDOT partners on 45-50 projects a year, representing about 5% of their total number of contracts, but about 45% of the DOT's total contract value.

3.2.2 Partnering Workshop

ADOT – The composition of the partnering team participating in the initial ADOT partnering workshop depends on the approach the team takes toward building the partnership. The concept is that all affected partners must have a representative present. ADOT has learned that it is very effective to hold a partnership meeting to develop the charter, etc,. and then roll it out to the field level to gain their buy-in. They seldom hold large meetings with more than 50 people. Many of ADOT's workshops have about 25 people and last less than a day.

KDOT - The partnering workshops are typically facilitated by KDOT employees or a consultant from a local university.

MSHA – The MSHA identifies key stakeholders and invites them to become members of the partnering team. Also, community and business representatives are invited when projects such as "streetscape improvements" affect business and local community interests.

TxDOT - TxDOT workshop facilitators are chosen from a pool of 15 vendors (26 trained facilitators). There are also 32 facilitators on staff at TxDOT and some contractors have facilitators who can lead a workshop. The in-house and contract facilitators are required to complete a TxDOT-sponsored "facilitator certification" course (32 hours) that is offered one to two times a year.

3.2.3 Strengths of Their Program

ADOT – The following are particular attributes of ADOT's partnering program.

1. Standard specifications include a partnering section.
2. The Construction Manual addresses partnering principles.
3. Bi-monthly meetings of AGC and ADOT leadership to discuss issues and common goals.
4. An industry-wide partnering advisory committee meets quarterly to give input to partnering processes and act as liaisons within the community.
5. Weekly meetings are conducted on construction projects, including one meeting a month which focuses on the partnership and how it is working.

6. There are five training classes that have been developed that support partnering principles.
7. On complex and high-dollar-amount projects, the partnering facilitator/consultant can provide assistance to the partnering team as needed.
8. The Partnering Evaluation Program (PEP) provides a tool for project team members to evaluate the goals and give feedback.
9. Partnering staff members are in place to support field construction offices. They also provide program oversight and administration.
10. The field level staff is empowered to make decisions.

KDOT - KDOT and the KCA recently put together a mediation team using an outside consultant, a contractor, and a KDOT employee. The mediation team is available on request to help improve relations between the contractor and KDOT when problems between the two main parties are inhibiting the project.

MSHA – Their success can be attributed to the emphasis that MSHA places on the program. At the program level, the Maryland Quality Initiative Partnering Subcommittee (comprised of MSHA, contractor, and design consultant representatives) meets monthly to provide guidance for their partnering initiatives**.** The Subcommittee has recently published the January 2002 edition of "*Field Guide to Partnering on MSHA Projects*" to help stakeholders in partnering processes. At the project level, there are kick-off partnering workshops, monthly partnering meetings, intermediate follow-up workshops, partnering evaluations, and field visits by MSHA's Partnering Coordinator.

TxDOT – One of the TxDOT program's strengths is in project recognition. Their Office of Continuous Improvement provides awards for well-partnered projects. There are no formal criteria for an award, other than a recommendation from the District Engineer (TxDOT has 25 geographic districts). The District Engineer makes a recommendation based on an assessment that a particular partnered project is worthy of recognition. The Office of Continuous Improvement then awards plaques to the partnering team recognizing their efforts.

4.0 SURVEY OF ODOT STAFFS AND CONTRACTORS

In October 2001, ODOT contracted with the University of Oregon Survey Research Laboratory (OSRL) to conduct a telephone survey of ODOT Project Managers and their staffs, as well as contractor representatives to determine their perceptions about partnering's favorable aspects, as well as constraints that are limiting its effectiveness.

The sampling frame of possible survey respondents were those ODOT and contractor employees who had previously been involved with at least one partnered project. Initially, 168 people from ODOT and 59 from the contractor community were identified for the survey. Of the 168 ODOT employees identified, 132 completed the survey. Most of the 36 non-respondents were ineligible because they actually had not been involved with a partnered project. Of the 59 contractors identified, 42 completed the survey. Some contractors did not want to be surveyed over the telephone, while others were unavailable. The survey questions addressed the following topics:

- Experience with partnering;
- Partnering workshops;
- Beneficial outcomes of partnering;
- Dispute resolution;
- Partnered and non-partnered project comparison;
- Factors affecting decisions when to partner;
- Measuring partnering's effectiveness;
- Extent to which partnering is beneficial; and
- Recommended improvements.

Key findings from the survey are presented in this chapter. The complete results for the survey including the survey questionnaire are available from ODOT's Research Group.

4.1 EXPERIENCE WITH PARTNERING

The first survey question asked respondents how many times they had worked on projects that were formally partnered. A large majority of ODOT personnel have limited experience with partnering. The average number of projects partnered for ODOT employees was 2.7. For contractors it was 5.4 projects. Further, over 93% of ODOT staff (124 of 132) had partnered five or less times, compared to 71% (30 of 42) of the contractors.

The ODOT survey respondents consisted of a wide cross section of job types, as shown in Figure 4.1. Inspectors comprised the largest category of those surveyed (28%).

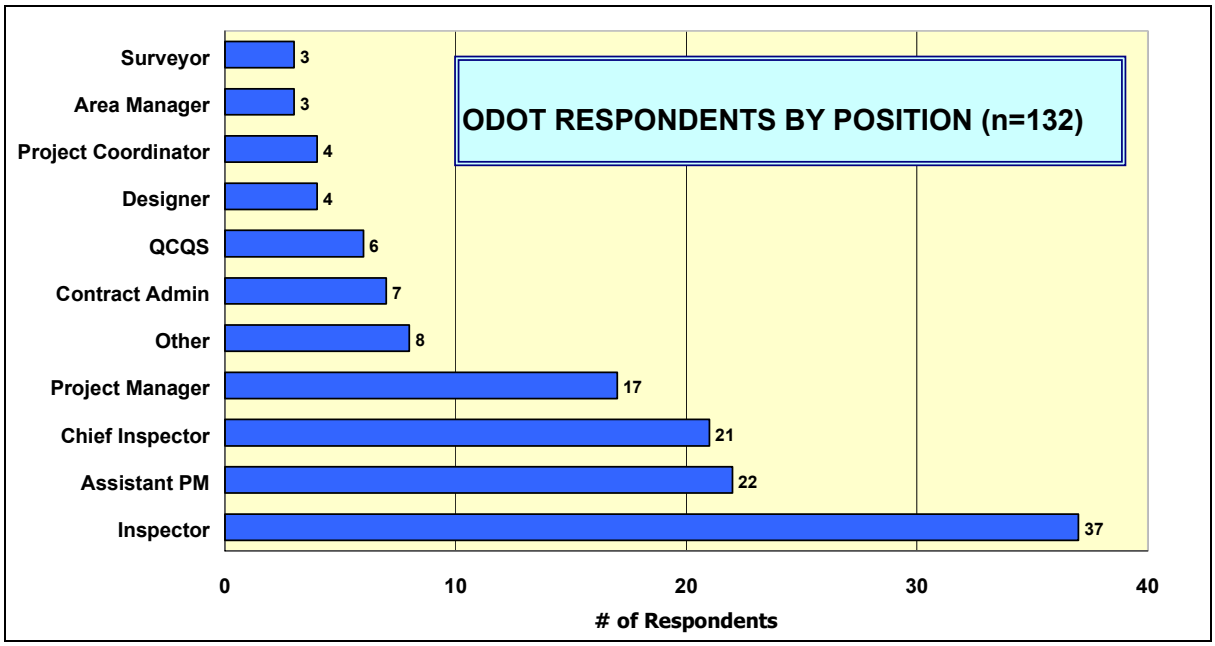


Figure 4.1: ODOT Survey Respondents by Position

The contractor positions included: superintendents, project and field engineers, chief executive officers, and others. A total of 16 different companies were represented in the survey sample out of the 28 that were originally contacted.

4.2 PARTNERING WORKSHOPS

A series of questions addressed the partnering workshop. The first asked: "How often did you develop or discuss project schedule in the partnering workshop?" Table 4.1 shows the majority of respondents said project schedule was discussed either "always" or "most of the time."

Table 4.1: Discussion of Project Schedule in the Partnering Workshop

		How often did you develop or discuss project schedule in the partnering workshops?					
		Always	**Most of the Time**	**Sometimes**	**Rarely**	**Never**	**Total**
ODOT	Count	33	38	23	19	16	129
	%	25.6%	29.5%	17.8%	14.7%	12.4%	100.0%
Contractor	Count	10	11	12	3	4	40
	%	25.0%	27.5%	30.0%	7.5%	10.0%	100.0%
Total	Count	43	49	35	22	20	169
	%	25.4%	29.5%	20.7%	13.0%	11.8%	100.0%

The next question asked if mutual goals had been discussed in the partnering workshop. As Table 4.2 shows, 65% of the ODOT respondents and 78% of contractors answered either "always" or "most of the time."

Table 4.2: Discussion of Mutual Goals in the Partnering Workshop

		How often did you discuss specific mutual goals in the partnering workshops?					
		Always	**Most of the Time**	**Sometimes**	**Rarely**	**Never**	**Total**
ODOT	Count	53	31	27	16	2	129
	%	41%	24%	21%	12%	2%	100%
Contractor	Count	25	7	6	1	2	41
	%	61%	17%	15%	2%	5%	100%
Total	Count	78	38	33	17	4	170
	%	46%	22%	19%	10%	2%	100%

Respondents were then asked how often a mission statement or charter was discussed in the workshop. As seen in Table 4.3, a slim majority of ODOT respondents (51%) said either "always" or "most of the time," which were significantly lower than 83% of the contractors who answered either "always" or "most of the time."

Table 4.3: Discussion of a Mission Statement or Charter in the Partnering Workshop

		How often did you discuss a mission statement or charter in the partnering workshops?					
		Always	**Most of the Time**	**Sometimes**	**Rarely**	**Never**	**Total**
ODOT	Count	54	11	24	29	11	129
	%	42%	9%	19%	22%	9%	100%
Contractor	Count	27	7	1	3	3	41
	%	66%	17%	2%	7%	7%	100
Total	Count	81	18	25	32	14	170
	%	48%	11%	15%	19%	8%	100%

In another question about the workshop, respondents were asked if dispute resolution procedures were discussed. Table 4.4 shows that a slight majority of ODOT employees (55%) said "always" or "most of the time," whereas 76% of the contractors answered "always" or "most of the time."

Table 4.4: Discussion of Dispute Resolution Procedures in the Partnering Workshop

		How often did you discuss dispute resolution procedures in the partnering workshops?					
		Always	**Most of the Time**	**Sometimes**	**Rarely**	**Never**	**Total**
ODOT	Count	49	22	31	21	7	130
	%	38%	17%	24%	16%	5%	100%
Contractor	Count	22	9	7	2	1	41
	%	54%	22%	17%	5%	2%	100%
Total	Count	71	31	38	23	8	171
	%	42%	18%	22%	13%	5%	100%

Respondents were asked if procedures for follow-up on project goals were discussed in the workshop. As shown in Table 4.5, less than 50% of ODOT personnel said "always" or "most of the time," compared to just a slight majority of contractors (54%).

Table 4.5: Discussion of Procedures for Follow-up on Goals in the Partnering Workshop

		How often did you discuss procedures for follow-up on goals in the partnering workshops?					
		Always	**Most of the Time**	**Sometimes**	**Rarely**	**Never**	**Total**
ODOT	Count	29	20	45	28	8	130
	%	22%	15%	35%	22%	6%	100%
Contractor	Count	15	7	10	8	1	41
	%	37%	17%	24%	20%	2%	100%
Total	Count	44	27	55	36	9	171
	%	26%	16%	32%	21%	5%	100%

The next question asked: "How often did the workshops help you get to know the project team in a relaxed environment?" Seventy-two percent of ODOT respondents and 68% of the contractors answered either "always" or "most of the time" (Table 4.6).

Table 4.6: Getting to Know the Project Team in a Relaxed Manner in the Partnering Workshop

		How often did the workshops help you get to know the project team in a relaxed environment?					
		Always	**Most of the Time**	**Sometimes**	**Rarely**	**Never**	**Total**
ODOT	Count	44	36	27	17	6	130
	%	34%	28%	21%	13%	5%	100%
Contractor	Count	18	10	8	3	2	41
	%	44%	24%	20%	7%	5%	100%
Total	Count	62	46	35	20	8	171
	%	36%	27%	20%	12%	5%	100%

Respondents were then asked to choose the most effective workshop activity. Figure 4.2 shows the distribution of answers from the ODOT and contractor respondents. The highest choice among ODOT personnel, was "getting to know the project team in a relaxed manner," which was picked by 28% (37 of 132). Alternatively, the modal choice among contractors was " setting mutual goals." Thirteen of 42 (31%) contractors chose this activity.

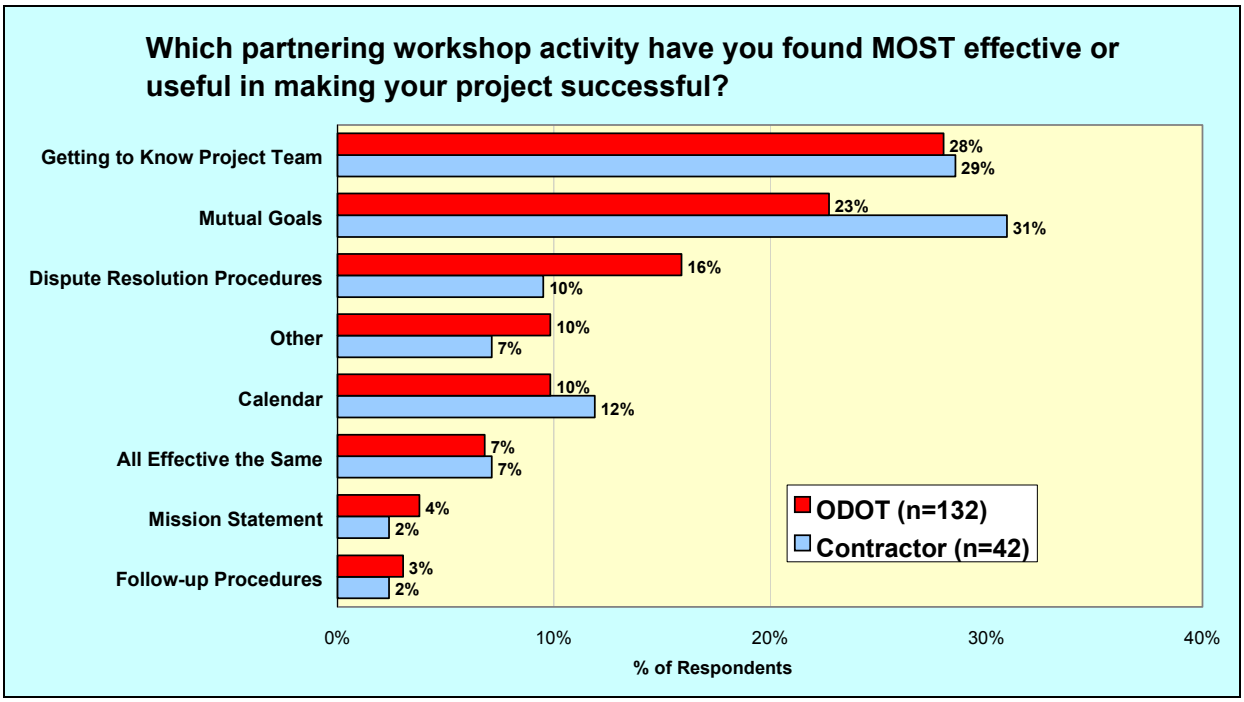


Figure 4.2: The Most Effective Workshop Activity

A follow-on question then asked what was the least effective workshop activity. Figure 4.3 shows that "development of a mission statement" was the least favorite among both ODOT and contractor respondents, with 38% and 29% respectively choosing this activity.

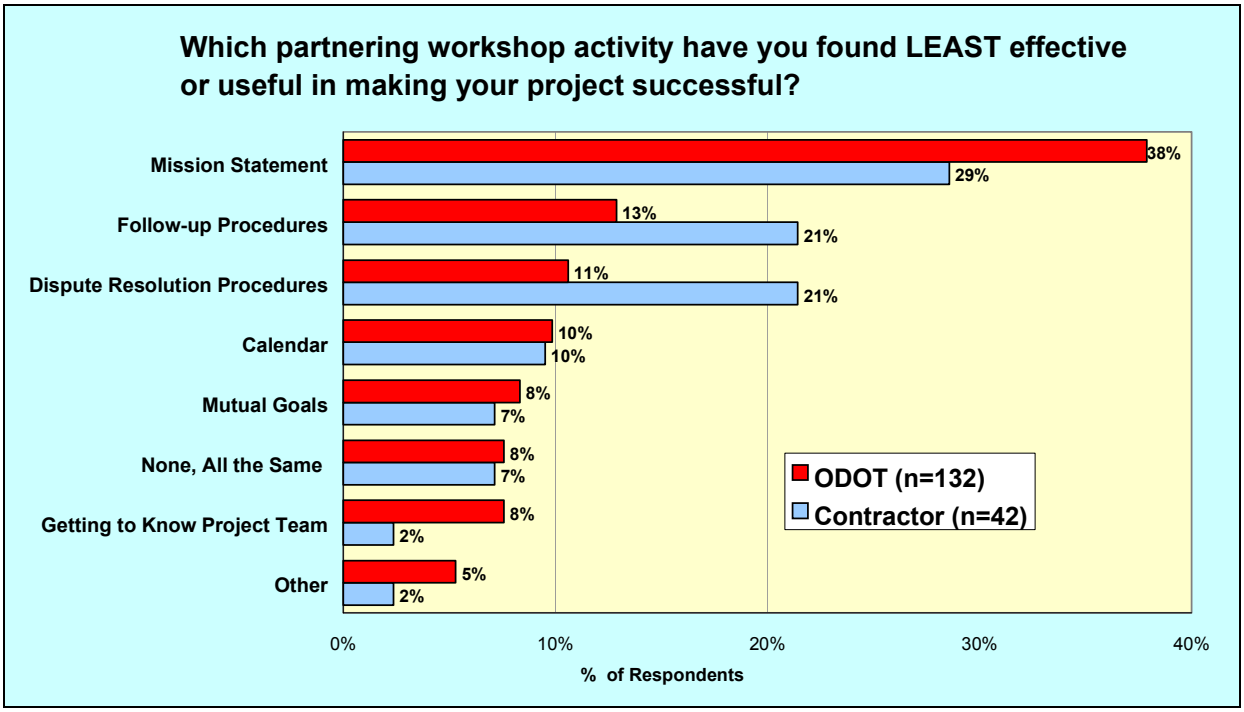


Figure 4.3: The Least Effective Workshop Activity

In another question about workshops, the respondents were asked: "How often are the goals and values created in the workshop actually carried out in the field?" As seen in Figure 4.4, 77% of the ODOT respondents said either "always," "most of the time" or "sometimes," compared to 88% of the contractors who said "most of the time" or "sometimes." Alternatively, 18% from ODOT answered "rarely" as compared to 7% of the contractor respondents.

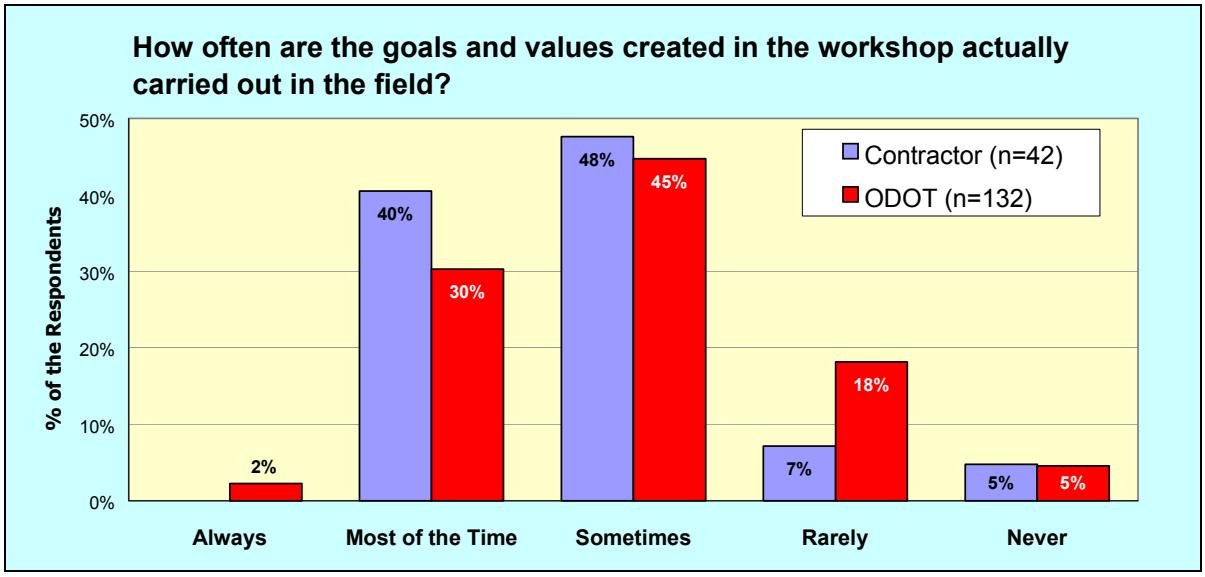


Figure 4.4: Extent to Which Goals and Values Created in the Workshop Are Carried Out in the Field

Respondents were also asked about "follow-up" or "close-out" workshops. About half had participated in at least one follow-up workshop. Only 14% (25 of 174) had participated in a close-out workshop. Those who had attended at least one follow-up workshop were asked how much that workshop had contributed to project's success. Figure 4.5 provides the distribution of responses.

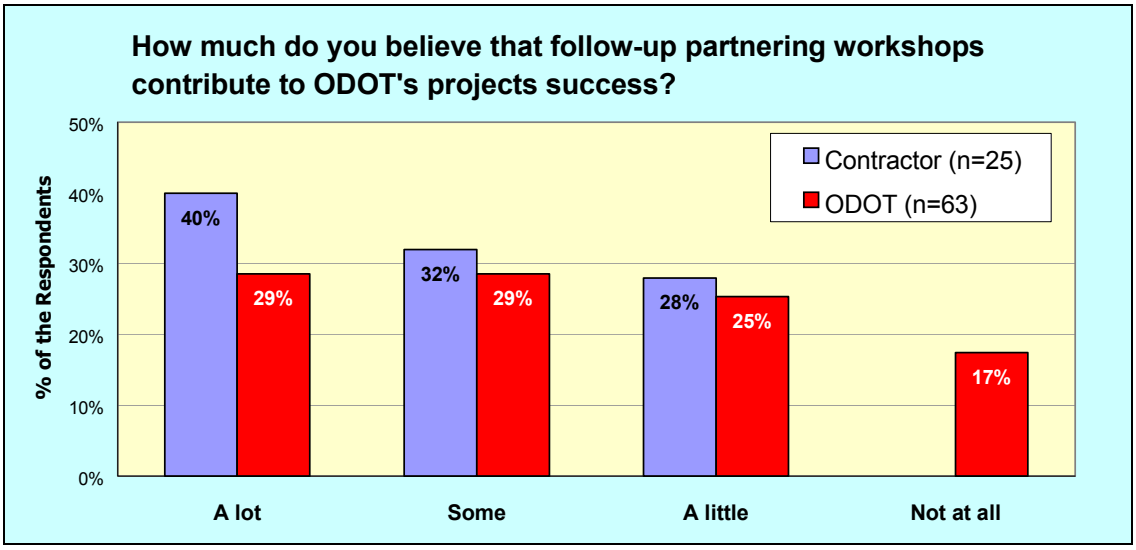


Figure 4.5: Extent to Which Follow-up Workshop Contributed to Project Success

Forty percent of the contractors believed the follow-up workshops were beneficial to the overall project success, compared to 29% for ODOT. In contrast, no contractors said "not at all," whereas, 17% of the ODOT respondents did not believe the follow-up workshops helped at all.

4.3 BENEFICIAL OUTCOMES OF PARTNERING

The survey included a series of questions related to the beneficial outcomes of partnering, i.e., increased communication, trust, and teamwork between ODOT and the contractor. Figures 4.6 to 4.8 show the responses to the three questions about improved communication, trust and teamwork.

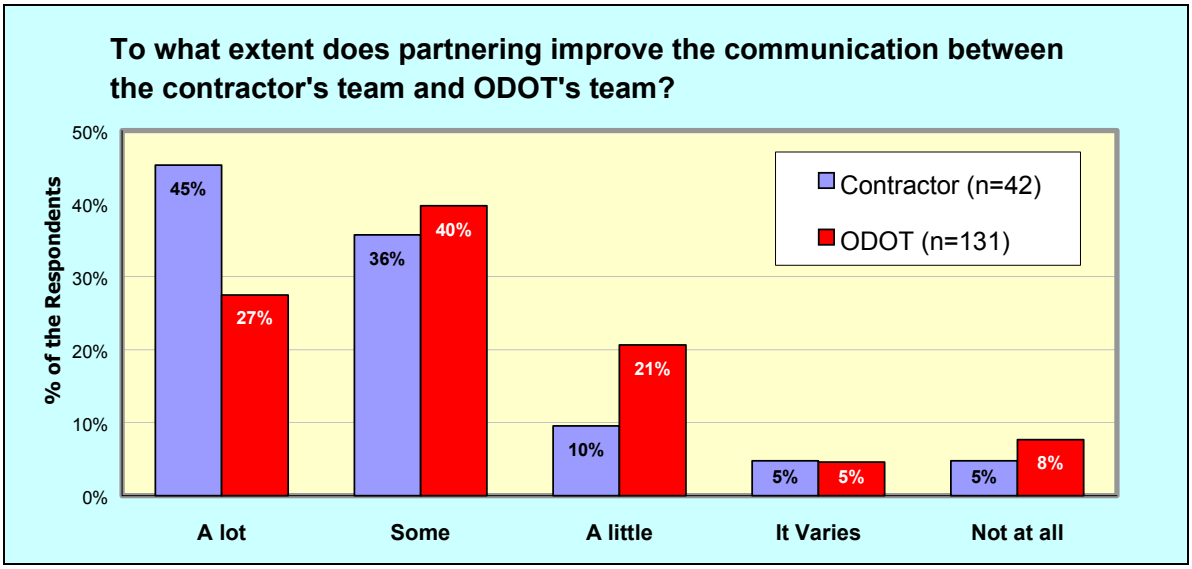


Figure 4.6: Extent to Which Partnering Improves Communication

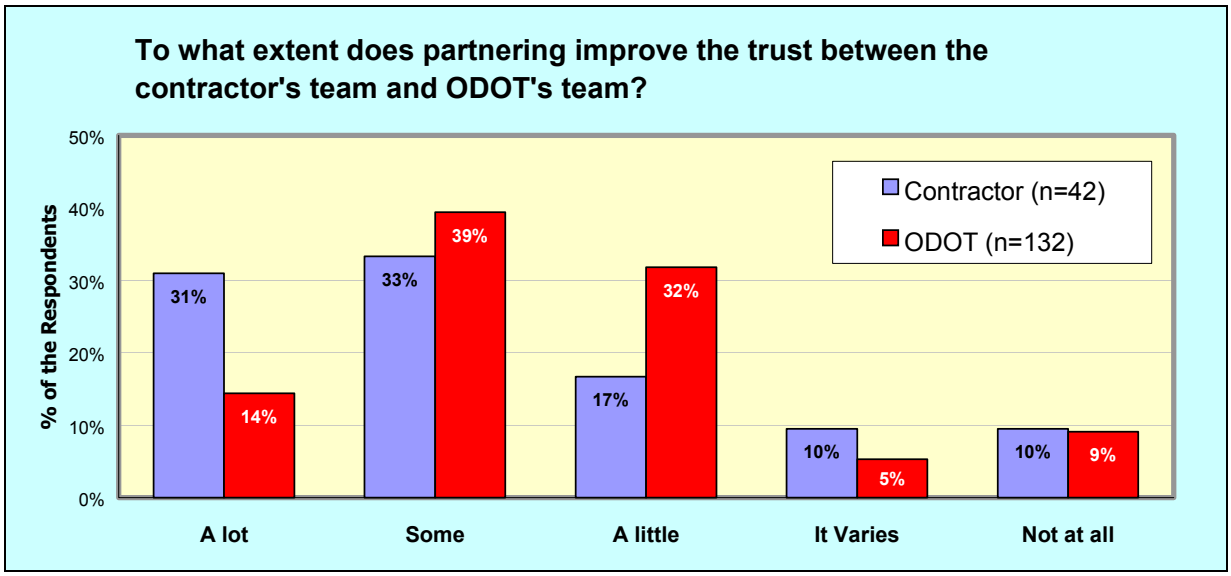


Figure 4.7: Extent to Which Partnering Improves Trust

Generally, ODOT, and to a slightly greater degree, the contractors, believe that partnering improves communication, trust, and teamwork between the two project teams. For instance, 81% of the contractors feel that partnering improves communication between the two parties "a lot" or "some," compared to 67% of the ODOT respondents who answered "a lot" or "some" (Figure 4.6).

Figure 4.7 shows that 64% of the contractor respondents believe that partnering improves trust between the two parties "a lot" or "some." Alternatively, a slight majority (53%) of ODOT respondents feel partnering improves trust "a lot" or some" (Figure 4.7).

In the third question about the extent to which partnering improves teamwork between the contractor's and ODOT's team (Figure 4.8), 76% of the contractors said "a lot" or " some," compared to 63% of the ODOT respondents. Conversely, only 14% of the contractors chose the "a little" response, whereas 24% of the ODOT respondents picked the "a little" category.

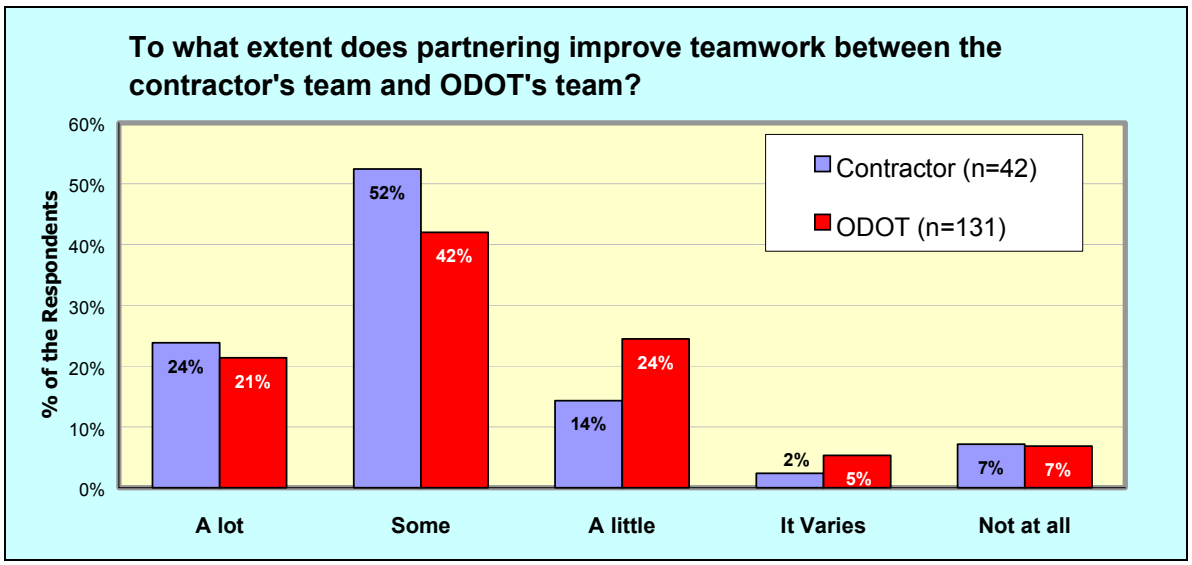


Figure 4.8: Extent to Which Partnering Improves Teamwork

4.4 DISPUTE RESOLUTION PROCESSES

This part of the survey addressed the dispute resolution (DR) processes created during the partnering workshop. The first questions asked the 174 respondents if they had ever implemented the DR process that was created during the partnering workshop. Most (100 of 174) had done so, but 66 had not, and 12 did not know.

The next question asked the 100 who had utilized the DR process how many times they had implemented the process in the past (including multiple times on a single project). The responses ranged from 1 to 30 times and the mean value was about 10.8 times.

The third question about DR asked: "Did the process usually help resolve the dispute more swiftly?" Figure 4.9 shows the response distribution for ODOT and contractor personnel.

Generally, for both the contractors and ODOT, a majority of respondents, 54% and 61% respectively, said the DR process helped resolve disputes faster.

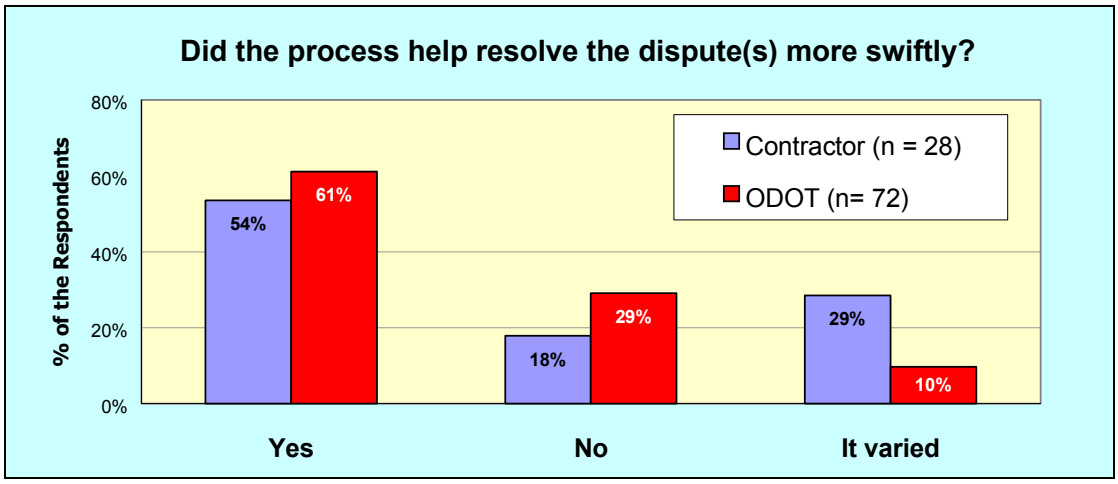


Figure 4.9: Did the DR Process Resolve Disputes More Swiftly?

The fourth DR question asked about effects of the DR process on change orders. Figure 4.10 shows the answer distribution for respondents when asked if there were fewer change orders when the DR process was in place. Most respondents, contractor and ODOT alike, said "no." The high percentage of "no" answers (64-67%) demonstrates the distinction between change orders and disputes. A project can have a relatively high number of change orders because of unforeseen sight conditions or design omissions, and still have few or no disputes.

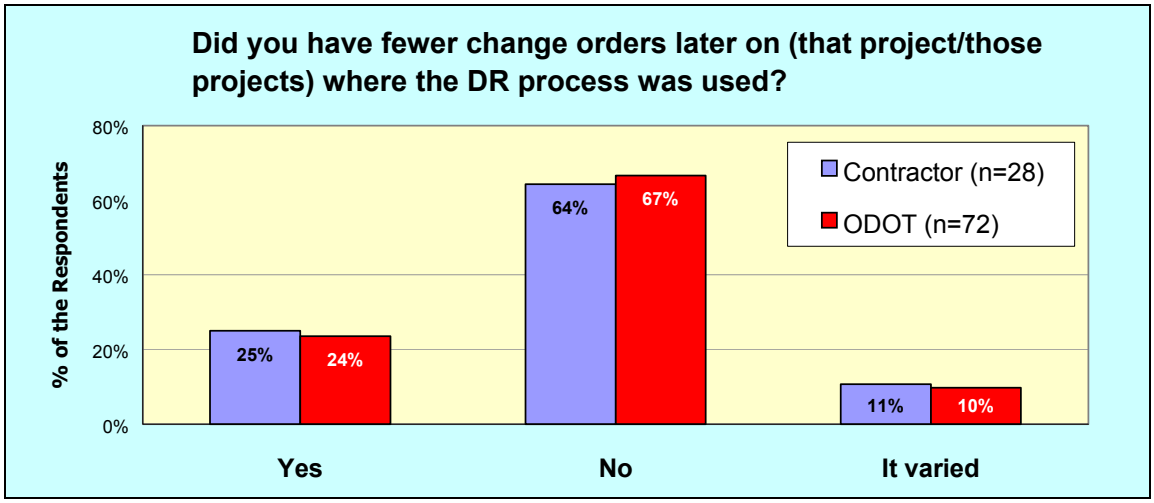


Figure 4.10: Were There Fewer Change Orders Because of the DR Process?

Next, respondents were asked if the DR process resulted in lower claims cost. As seen in Figure 4.11, the percentage of contractors who said "yes" was significantly higher than ODOT's percentage of "yes" answers. This could indicate that there is a perception difference between the two groups as to the meaning of "lower claims costs."

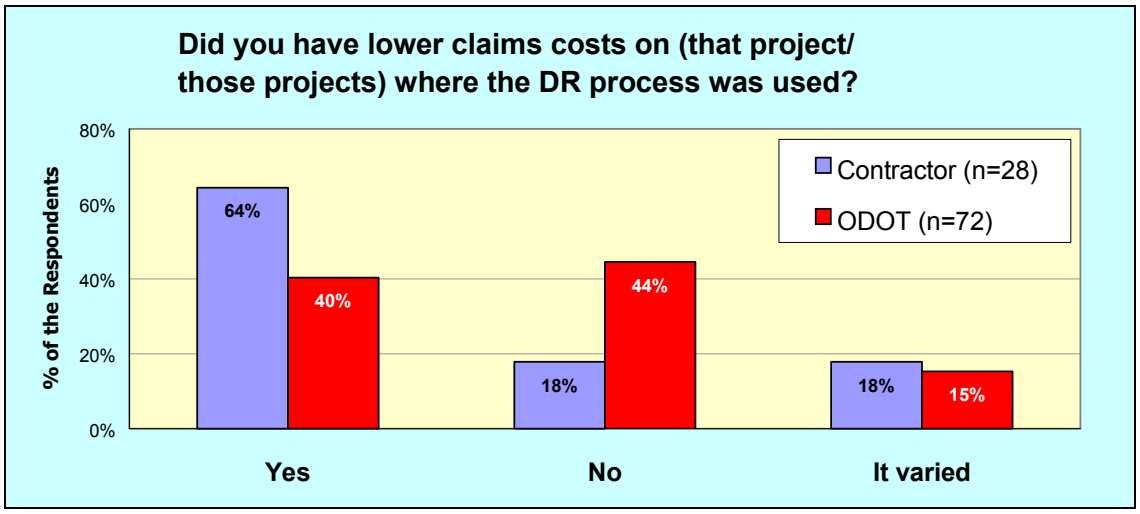


Figure 4.11: Were Lower Claims Costs Because of the DR Process?

When asked to rate how well the DR process worked, Figure 4.12 shows that half of the ODOT respondents rated it either "excellent" or "good," with the modal response being in the "good" category (47%). Contractors, on the other hand, rated the DR process somewhat lower, with 50% giving it a "fair" rating and 14% rating it in the "poor" category.

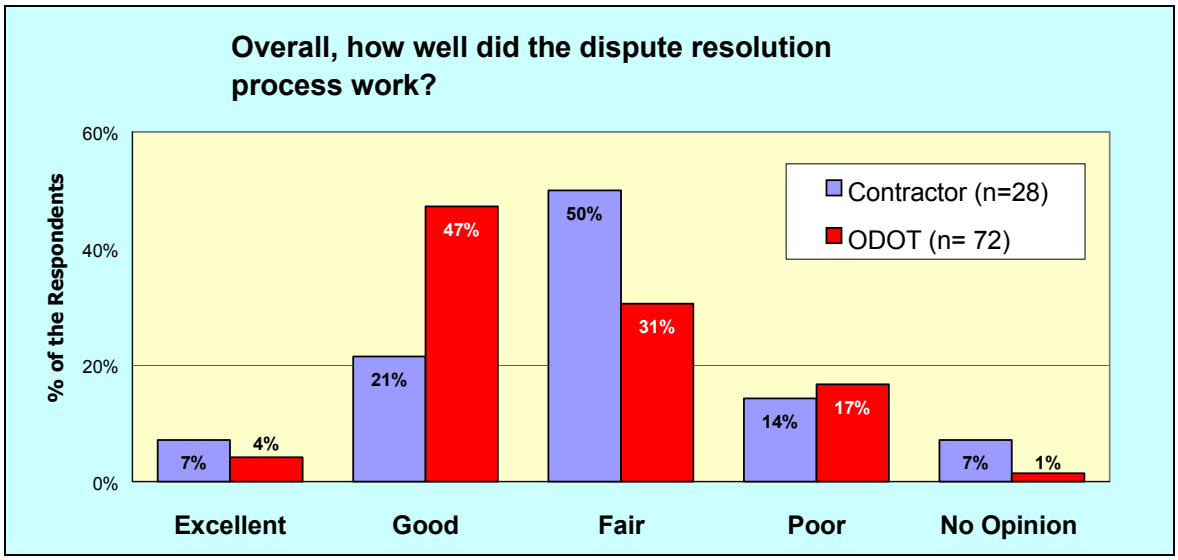


Figure 4.12: Overall Rating of the DR Process

The next question relating to DR attempted to find out if partnering had been used by one side to advance their position at the expense of the other's. Specifically, respondents were asked: "Have you ever seen partnering used to advance one side's position over the other?" Figure 4.13 shows that slightly more than half of the contractors and ODOT personnel had experienced a situation when partnering was used to gain an upper hand.

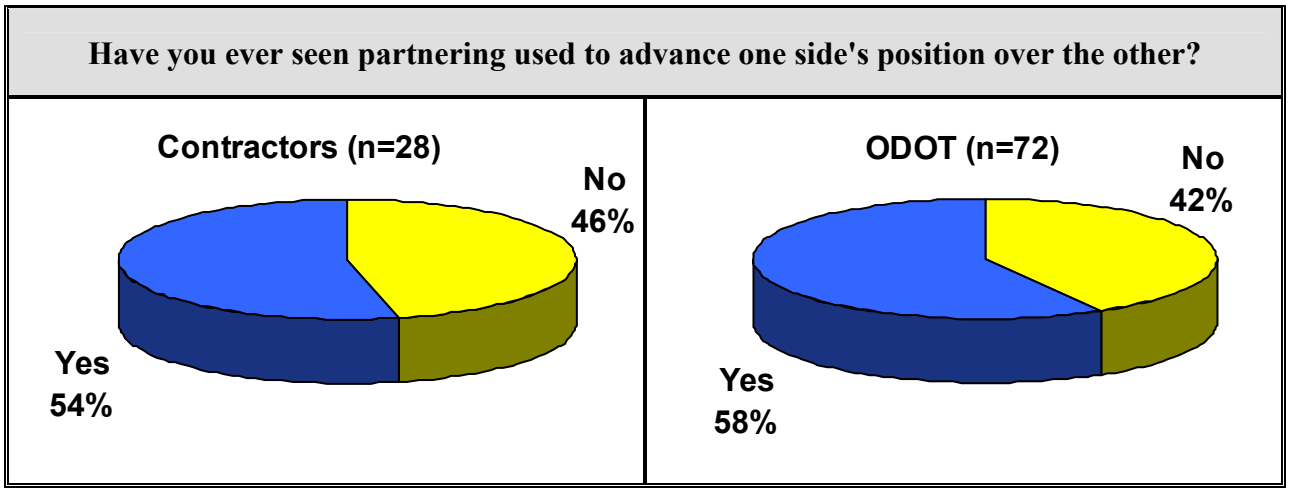


Figure 4.13: Was Partnering Used to Advance One Side's Position Over Another?

The final question in this series asked about using the DR process to make good decisions. Figure 4.14 shows the distribution of answers when respondents were asked: "To what extent has the DR process for partnered projects helped the project team make good decisions?" Seventy-eight percent of the contractors chose either "a lot" or "some" when answering. In contrast, 59% of the ODOT respondents picked either the "a lot" or "some" categories.

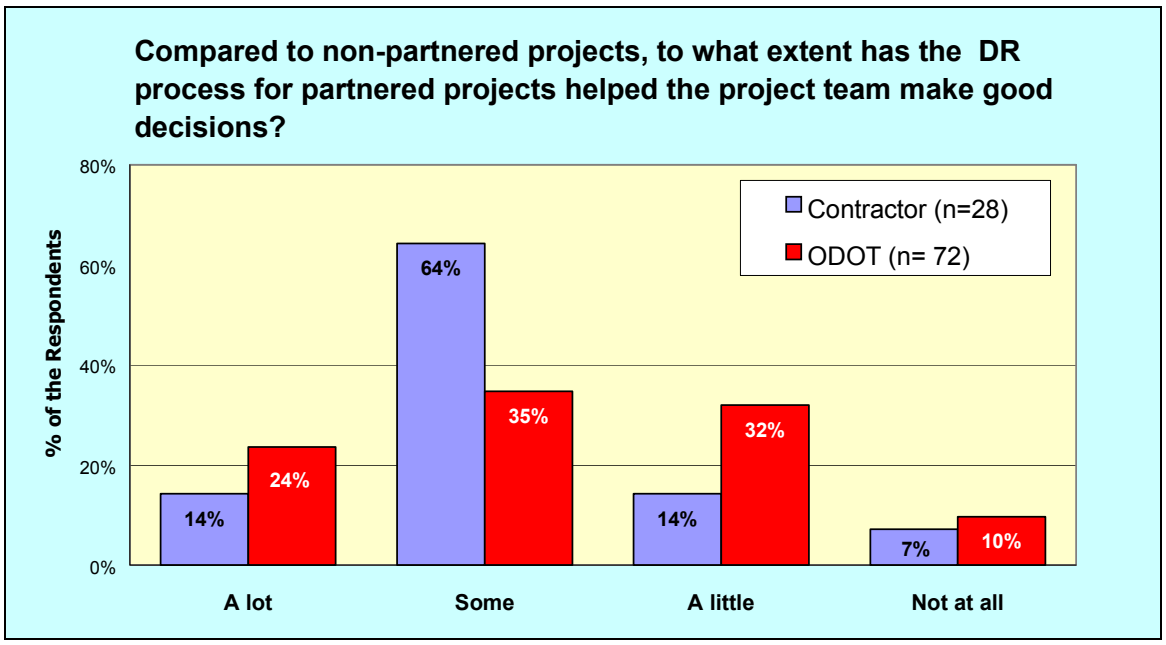


Figure 4.14: Extent to Which the DR Process Helped the Project Team Make Good Decisions

4.5 COMPARING PARTNERED AND NON-PARTNERED PROJECTS

In this portion of the survey, respondents were asked to compare their experiences on partnered and non-partnered projects through a series of questions covering a variety of project outcomes including:

- Quality of the finished product;
- Work zone safety;
- Decision making capability;
- Meeting project schedules;
- Reduction in number of claims; and
- Reduction of the size of claims.

4.5.1 Quality of the Finished Product

Respondents were asked: "Compared to non-partnered projects, do you believe partnering improves the quality of the finished product?" The results are presented in Figure 4.15.

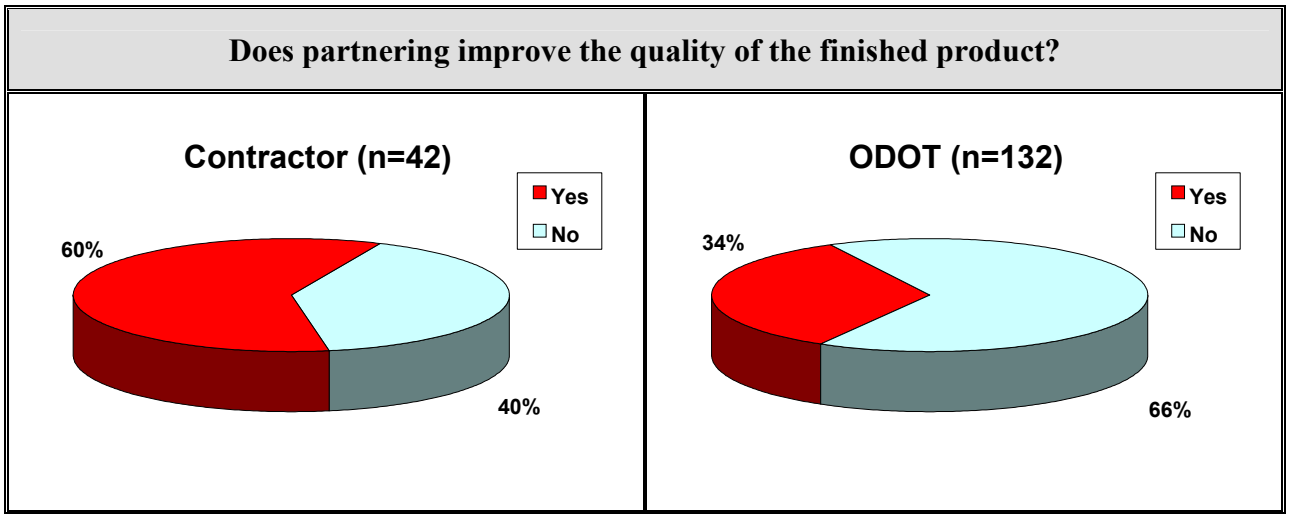


Figure 4:15: Partnering's Effect on the Quality of the Finished Product

There are significant differences in contractor and ODOT responses. The majority of contractors do believe that partnering helps improve quality of the finished product, whereas only about one third of the ODOT respondents believed that partnering improved quality.

4.5.2 Work Zone Safety

Contractors and ODOT personnel were asked if they believed that partnering improves work zone safety. As Figure 4.16 shows, the contractor and ODOT response distributions were about the same for this particular question. Fifty-five percent of the contractors answered "no," compared to 58% of the ODOT respondents.

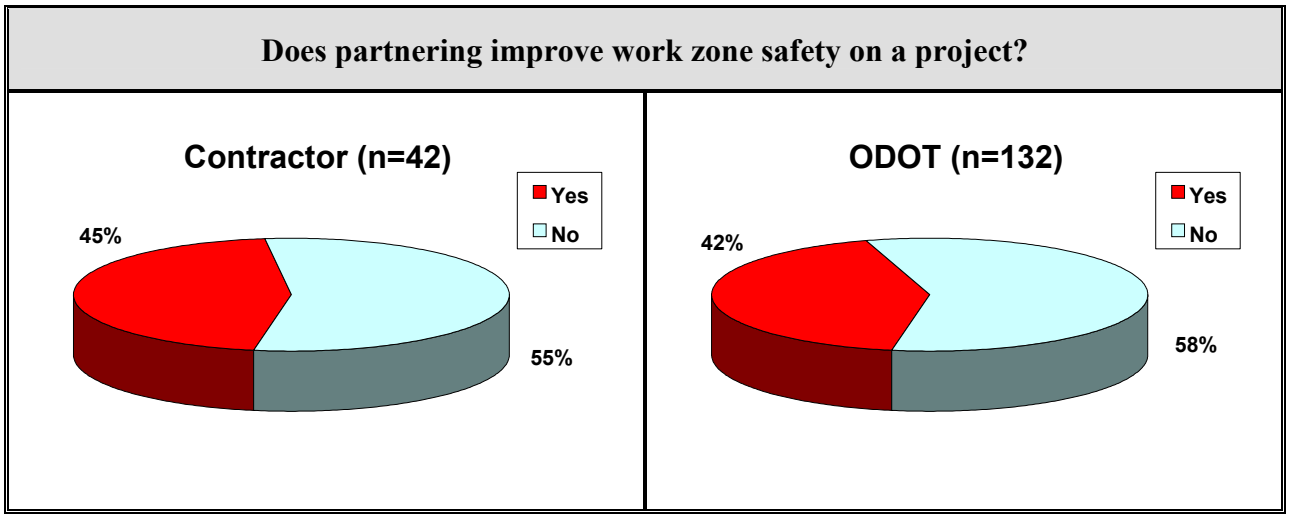


Figure 4.16: Partnering's Effect on Work Zone Safety

4.5.3 Decision Making Capability

Figure 4.17 shows the results to the next question, about partnering's effect on the project team's ability to make good decisions. An overwhelming majority of the contractors (80%) answered "yes," they believe that partnering does empower the project team to make needed decisions. Alternatively, a significantly lower percentage (56 %) of ODOT respondents answered "yes."

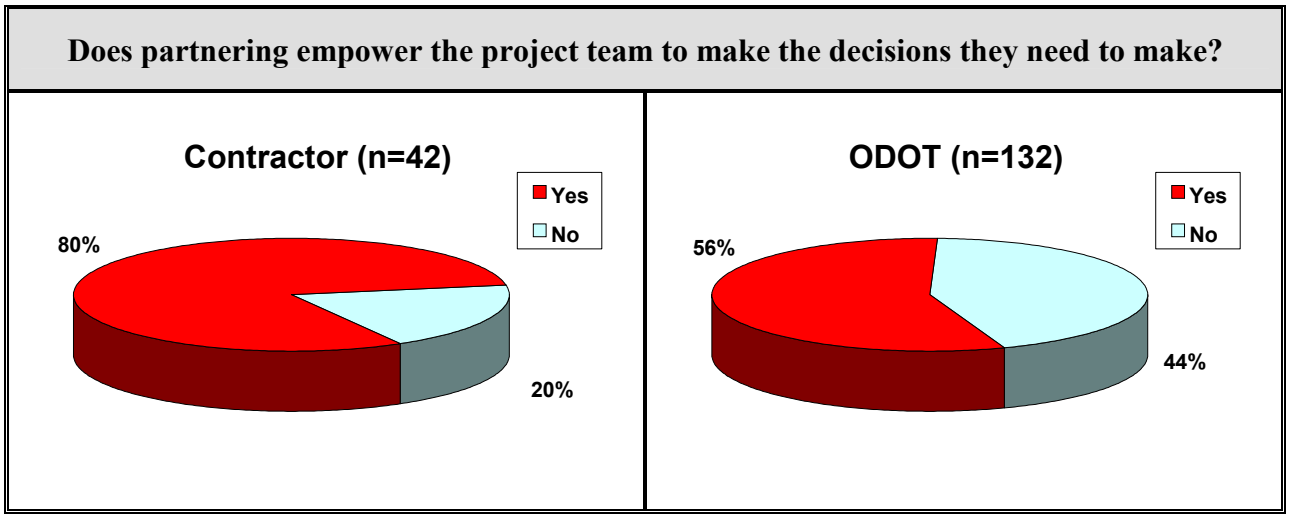


Figure 4.17: Partnering's Effect on Decision Making Capability

4.5.4 Meeting Project Schedules

The answer distributions for the question: "Does partnering improve the project team's ability to meet project schedules?" are displayed in Figure 4.18. There was a significant difference in the contractor and ODOT responses, with 83% of the contractors thinking partnering improves the project team's ability to meet project schedules, compared to 53% of the ODOT respondents.

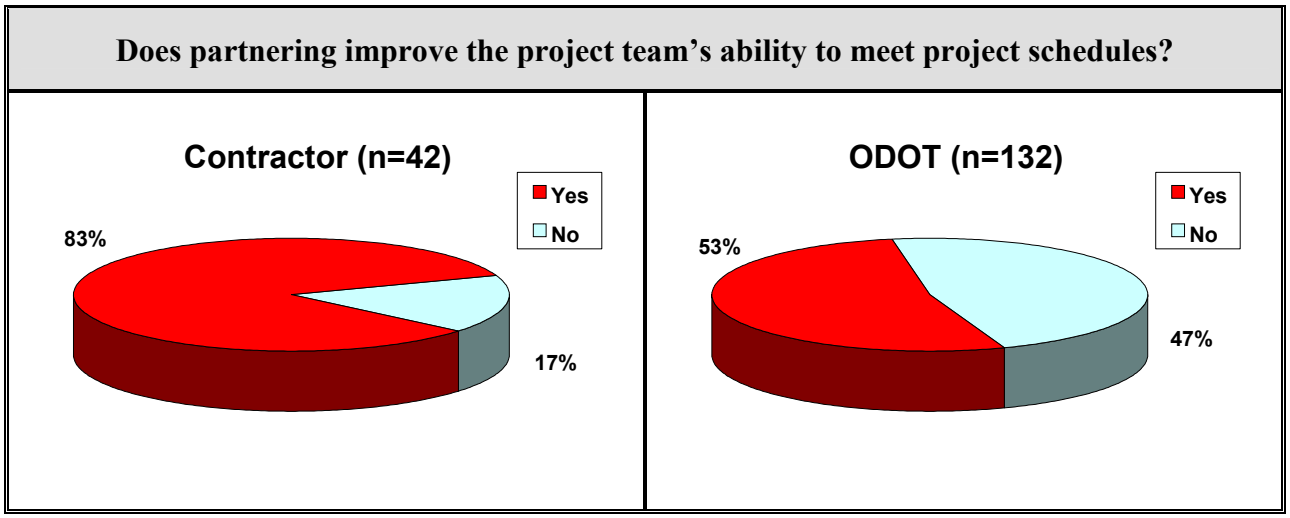


Figure 4.18: Partnering's Effect on the Meeting Project Schedules

4.5.5 Reduction in Number of Claims

This question asked: "Compared to non-partnered projects, do you believe that partnering reduces the number of claims on projects?" Again, there are significant differences in the contractor and ODOT response distributions. As seen in Figure 4.19, 71% of the contractors answered yes, compared to just 49% of the ODOT respondents.

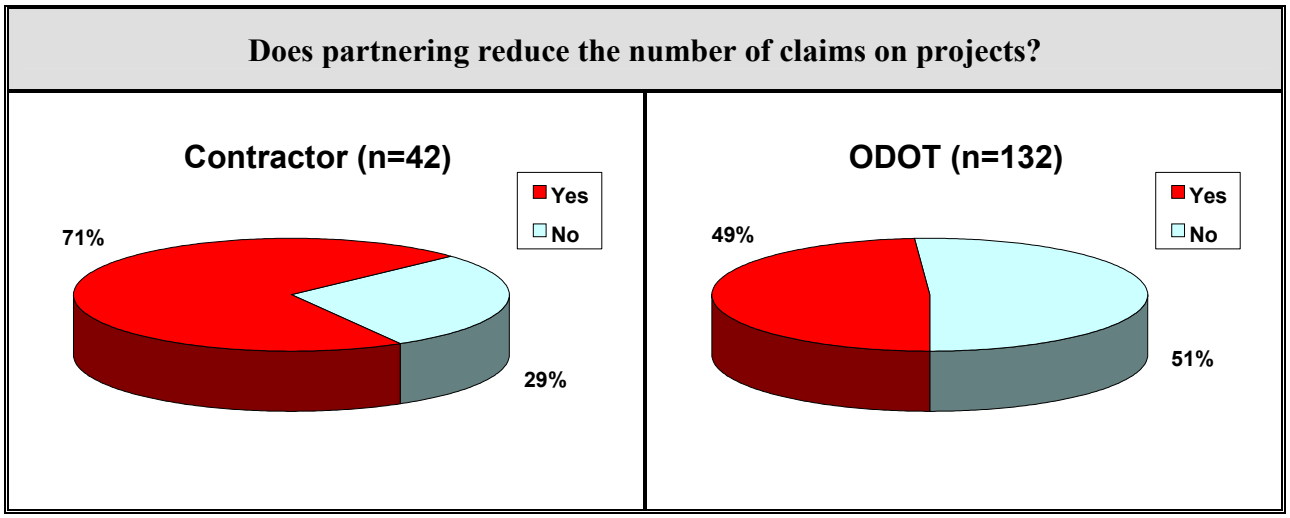


Figure 4.19: Partnering's Effect on Reducing the Number of Claims

4.5.6 Reduction of the Size of Claims

Similar to the previous question, respondents were asked: "Compared to non-partnered projects, do you believe that partnering reduces the size of claims on projects?" The answer distributions in Figure 4.20 also show significant differences between the contractor and ODOT responses.

Sixty-seven percent of the contractors answered "yes," whereas only 47% of the ODOT respondents think partnering reduces the size of claims on projects.

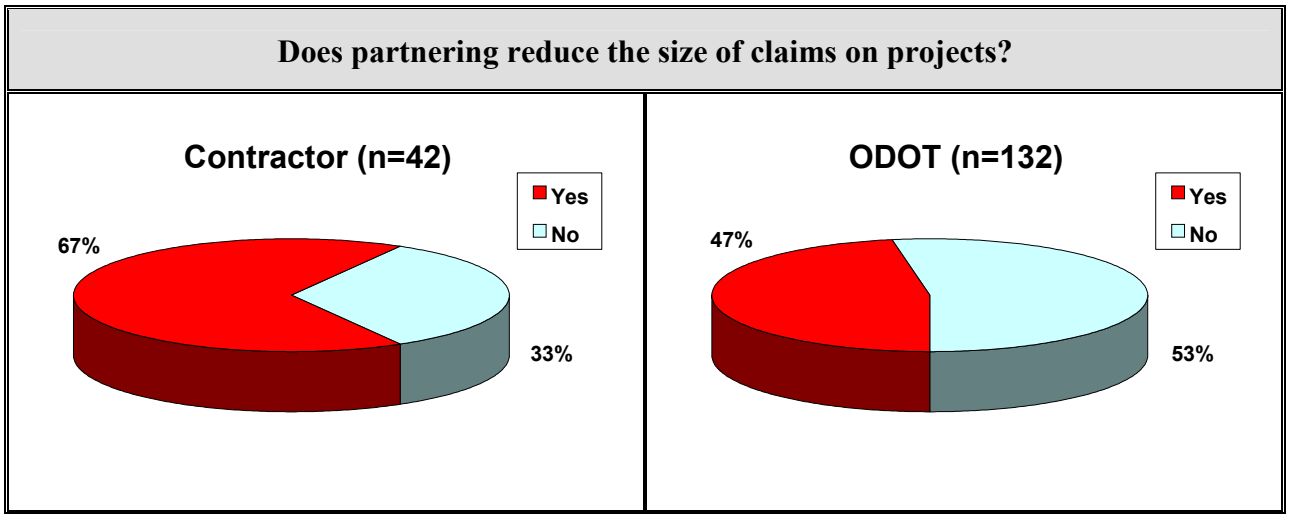


Figure 4.20: Partnering's Effect on Reducing the Size of Claims

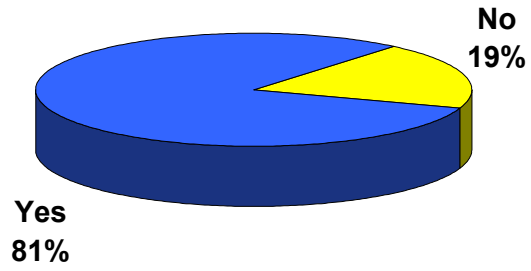
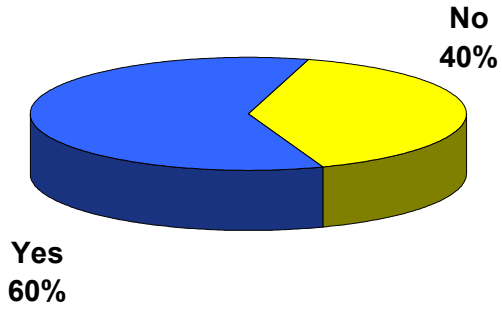
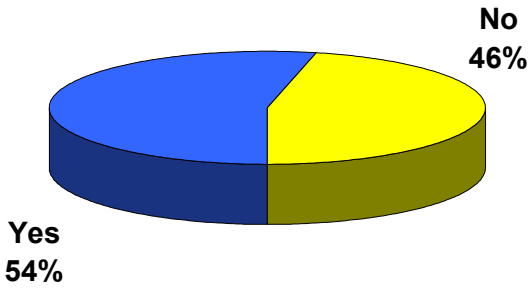
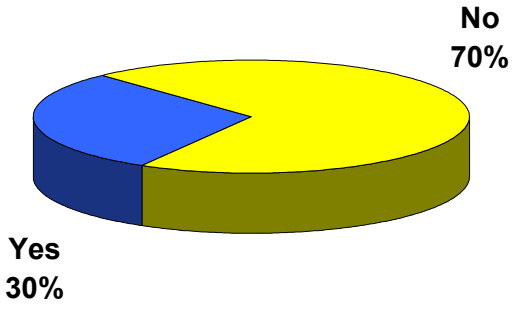
4.6 FACTORS TO CONSIDER WHEN DECIDING WHEN TO PARTNER

This series of questions sought information about factors to consider when making decisions about when to partner. The response distributions for the four questions are shown in Table 4.7. They show a combined response from contractors and ODOT personnel. The responses are pooled and presented as a single distribution, because the distributions for contractors and ODOT are about the same for each of the four questions.

Of the four factors to consider when making decisions about when to partner, project size appears to be the primary factor. Eighty percent of the respondents believed that project size should affect whether an ODOT project is partnered. In contrast, only 30% of the respondents felt that a project's urban or rural location should affect a decision about whether to partner.

The other two factors that respondents were asked to consider included: (1) project schedule and duration; and (2) previous experience in partnering with their counterparts. Sixty percent of the respondents thought that project schedule and duration should be considered when deciding whether to partner. As to previous experience with partnering, a slight majority (54%) believed prior experience should be taken into account when making decisions about when to partner.

Table 4.7: Factors to Consider When Deciding Whether to Partner

Question	Response Distribution
Do you believe **project size** should affect whether an ODOT project is partnered?	
Do you believe a project's **schedule and duration** should affect whether an ODOT project is partnered?	
Do you believe **previous experience** between ODOT and contractor personnel should affect whether an ODOT project is partnered?	
Do you believe an **urban or rural location** should affect whether an ODOT project is partnered?	

4.7 MEASURING THE EFFECTIVENESS OF PARTNERING

In this part of the survey, nine questions were asked regarding how to measure partnering's effectiveness. The OSRL interviewer asked respondents to think, in general, how the effectiveness of partnering could be measured, and then asked a series of questions about possible indicators that could be used to measure partnering's effectiveness. The indicators included:

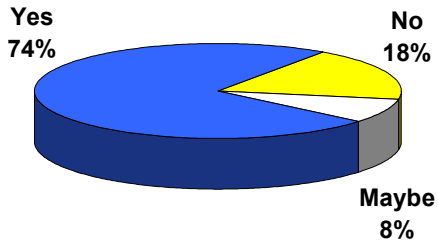
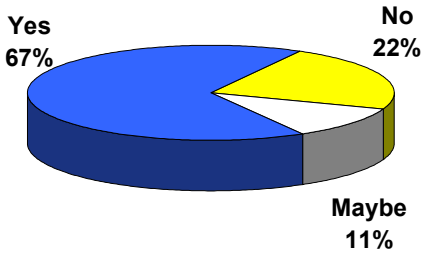
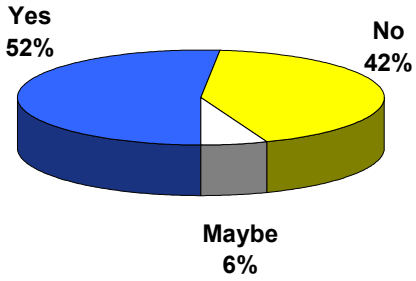
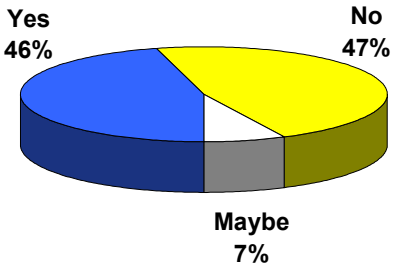
- Number of change orders;
- Cost growth due to change orders;
- Time extensions due to change orders;
- Number of claims;
- Claims cost;
- Liquidated damage costs;
- ODOT project administration costs;
- Contractor's administrative or overhead costs; and
- Time needed to resolve escalated issues.

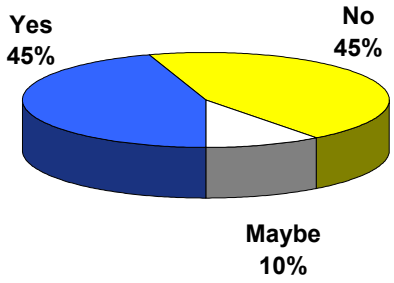
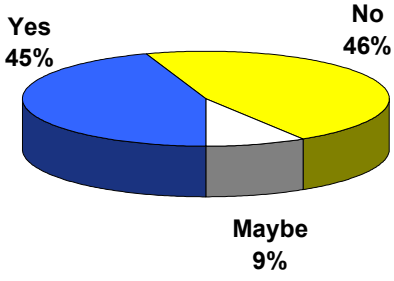
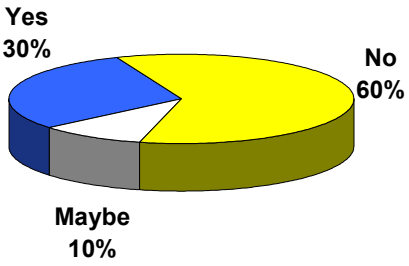
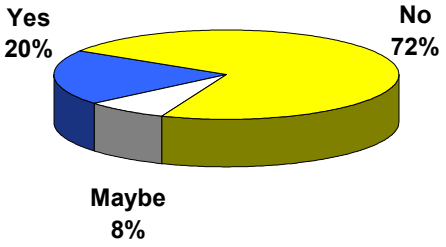
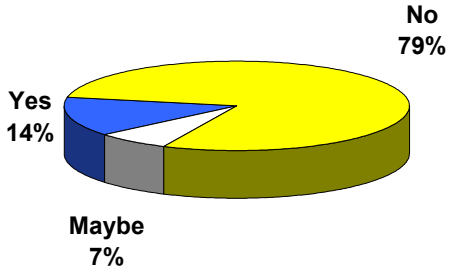
Table 4.8 shows the questions and the response distributions. The response distributions represent pooled responses from ODOT and contractor personnel. The questions are listed in order of percent of "yes" responses. Of the nine indicators, only three received responses in which a majority of respondents thought the indicator would be an accurate measure of partnering's effectiveness. These three indicators are:

- Time needed to resolve escalated issues (72%-"yes" responses);
- Number of claims (67%-"yes" responses); and
- Claims cost (52%-"yes" responses).

Each of the other six indicators received less than a majority of "yes" responses. Thus, if one were to decide which indicators were important to use when measuring partnering's effectiveness, the three that did receive a majority of "yes" responses, would seem to be the most widely accepted measures to implement.

Table 4.8: Measuring the Effectiveness of Partnering

Question	Response Distribution	Majority Answered Yes?
Do you think **time needed to resolve escalated issues** would be an accurate indicator of partnering effectiveness?		Yes
Do you think the **number of claims** would be an accurate indicator of partnering's effectiveness?		Yes
Do you think **claims costs** would be an accurate indicator of partnering's effectiveness?		Yes
Do you think **contractor's administrative or overhead costs** would be an accurate indicator of partnering's effectiveness?		No

Question	Response Distribution	Majority Answered Yes?
Do you think **ODOT's project administration costs** would be and accurate indicator of partnering's effectiveness?		No
Do you think **liquidated damage costs** would be an accurate indicator of partnering's effectiveness?		No
Do you **think time extensions due to change orders** would be an accurate indicator of partnering's effectiveness?		No
Do you think that **cost growth due to change orders** would be an accurate indicator of partnering's effectiveness?		No
Do you think that **the number of change orders** would be an accurate indicator of partnering's effectiveness?		No

4.8 EXTENT TO WHICH PARTNERING IS BENEFICIAL

In this part of the survey, two questions were asked to all respondents about the extent to which partnering had been beneficial. The two questions asked:

> *Overall, how often do you believe that the ODOT partnering program has been beneficial for ODOT?"*

and

> *Overall, how often do you believe that the ODOT partnering program has been beneficial for contractors?"*

The results of these two questions are shown in Figures 4.21 and 4.22.

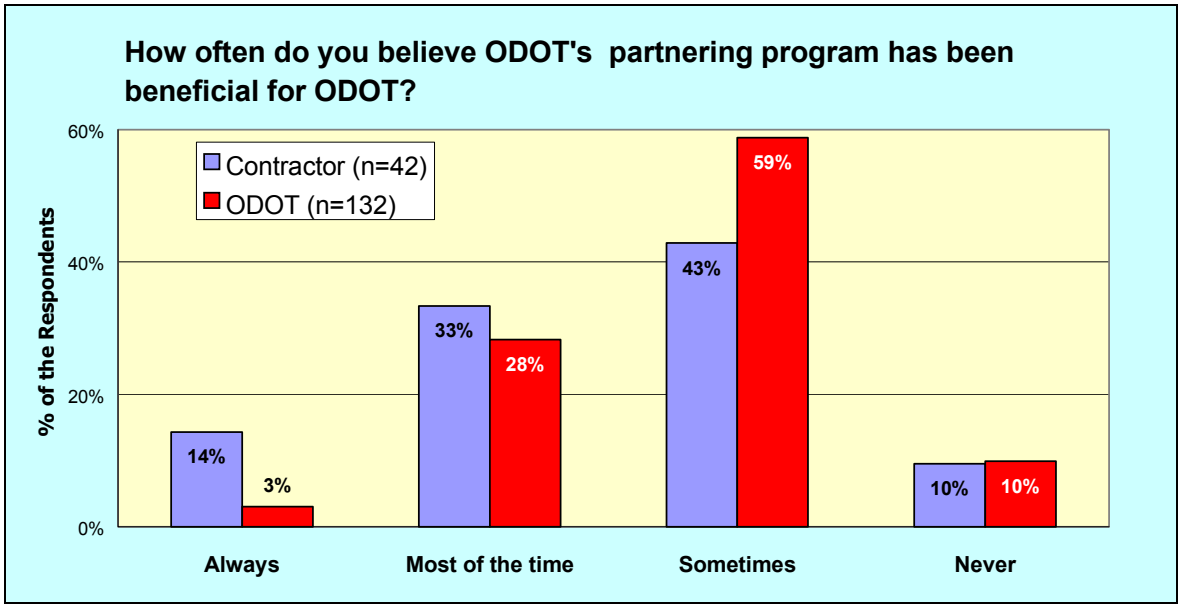


Figure 4.21: Partnering's Benefits to ODOT

Figure 4.21 shows that only 31% of the ODOT personnel feel that partnering was beneficial to ODOT "always" or "most of the time," whereas 43% of the contractors believed that they (the contractor) benefited from partnering, as seen in Figure 4.22. Conversely, 47% of the contractors think ODOT benefited from partnering "always" or "most of the time" (Figure 4.21), and 47% of ODOT respondents consider partnering to benefit the contractors "always" or "most of the time" (Figure 4.22). The results of these two questions suggest that ODOT respondents are more pessimistic about the benefits of partnering to the Department.

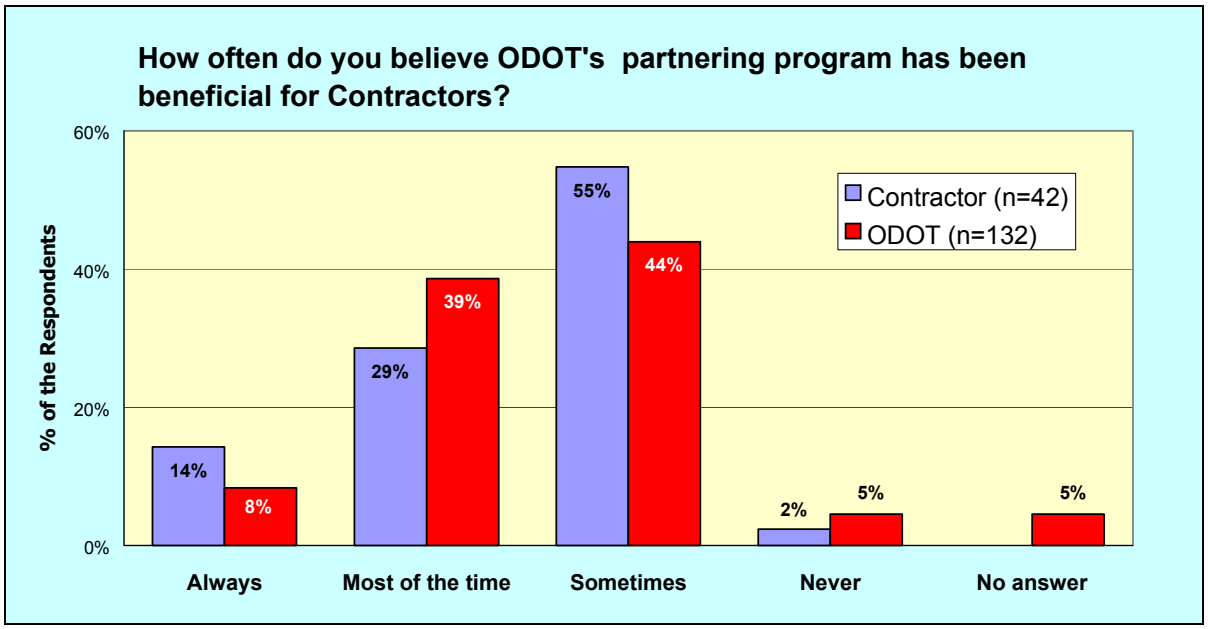


Figure 4.22: Partnering's Benefits to Contractors

4.9 RECOMMENDED IMPROVEMENTS

The concluding questions in the survey requested feedback from respondents that could be used to develop improvements to partnering processes. These questions were open-ended, where respondents could answer any way they wished.

The first of four questions in this series asked: "*What techniques do you use to get commitment from all individuals to make partnering work?"* Of the 174 asked this question, 152 provided responses. The responses were categorized and are summarized in Table 4.9. Not surprisingly the technique cited by most related to "establishing good communication."

Table 4.9: Ways to Obtain Commitment to Partner

Response Category	Number of Responses
Establish good communication	36
Be committed to initial charter	20
Cooperate with your partner	14
Establish common goals/benefits	12
Conduct regular/follow-up meetings	10
Display honesty/trust	8

The following are some quoted responses on the ways to obtain commitment to partner.

"Communication--discussion of the benefits and common goals."
"Basically reminding them of promises made. The use of meetings rather than letters."
"Focus on interests instead of positions."
"Regular meetings are the only technique that we really do to help partnering work."
"Have an individual identified as a partnering champion that follows up and checks with the partners to ensure that they're fulfilling their obligations."

The next question asked respondents, "*What aspects of partnering work well on a project, based on your experiences?"* Table 4.10 summarizes the results to this open-ended question in which 170 people answered. The majority of answers related to either "getting to know your partners" or "developing channels of communication."

Table 4.10: Aspects of Partnering That Work Well

Response Category	Number of Responses
Get to know your "partners"	43
Developing channels of communication	39
Problem solving/dispute resolution goes more smoothly	22
Establishes mutual goals/benefits	11
Having scheduled weekly meetings	9
Commitment to get along/work together	7

The following are direct quotes from respondents about what aspects of partnering worked well.

"Helps you to get to know each other and get a working relationship in the field."
"It provides an atmosphere of accountability. It's an atmosphere building process."
"Seeing the situation from the other party's point of view."
"Buy-in to a common goal."
"Get a commitment from both sides to be honest and direct: approach issues as project related and not personal."
"The only positive thing -- meeting your counterparts."

In addition to finding out what aspects worked well, the authors wanted to also uncover any aspects of partnering that posed challenges. When asked, "*What aspects of partnering present challenges on a project based on your experience,"* 170 respondents answered; a summary of their responses is provided in Table 4.11. There was no one single challenge that stood out. About 13% of the respondents said some aspect of "dispute or conflict resolution" presented challenges. Twelve percent talked about "overcoming animosity/differences," and 11% mentioned "commitment to partnering" as a challenge.

Table 4.11: Aspects of Partnering That Presented Challenges

Response Category	Number of Responses
Dispute/conflict resolution	22
Overcoming animosity/differences	20
Commitment to partnering	19
Negotiations/money matters	16
Communication	14
Honesty/trust	14
False expectations of partnering	10

Some directly quoted responses from those surveyed include:

"Animosity between the contractor and agency."
"Trying to get past the "us versus them" type of scenario."
"Anytime extra work comes up, that have to be dealt with, you have to negotiate money, then partnering is put to the test."
"False expectation for the contractors that ODOT staff will be able to change or work around rules or policies."
"Maintaining enthusiasm and commitment over a longer project due either to time or changing players."

The final question of the survey asked, *"If there were two things you could change or improve about partnering, what would those be?"* The responses to this open-ended question are categorized in Table 4.12. There were 154 who offered a suggestion while about twenty said "I don't know." Most who offered suggestions only provided one recommended change.

As Table 4.12 shows, the answers were all across the board; there was no clear consensus. The most frequently occurring answer (12% of the total) related to "more workshop time or follow-up sessions." Another recommendation made by about nine percent of the respondents was about "making a stronger commitment to partnering."

Although some respondents favored more workshop time and follow-up workshops, 10 people (six percent) actually suggested shorter or more informal workshops. Also, a small percentage (six percent) actually suggested eliminating partnering.

Table 4.12: Suggestions for Improving Partnering

Response Category	Number of Responses
More Workshop Time/Follow-up Sessions	18
Stronger Commitment	14
More Informal Setting for Workshop/Shorter Workshop	10
Partnering is Ineffective/Eliminate it	10
Follow-through on Mission Statement	8
More Job Specific Partnering Sessions	8

The following are some quoted responses on ways to improve or change partnering:

"A little more workshop with the players; maybe a problem is given and see how the parties can solve it."
"Follow-up and recommitment to the original project goals and the partnering mission statement."
"If you have a person who doesn't want to partner then they need to be removed from the job."
"Give field personnel the ability to make decisions. ODOT should step up to the plate on their honesty policy."
"Follow-up to the original meeting to evaluate the effectiveness and to fine tune the rough edges."
"Have all partnering sessions deal with job-specific issues."

4.10 SUMMARY OF ODOT/CONTRACTOR SURVEY

Experience with Partnering. ODOT experience with partnering is relatively low. Ninety-three percent of ODOT staff who participated in the survey have partnered five times or less. Contractors, on the other hand, have more experience with partnering. The average number of times contractors had partnered was 5.3 times compared to 2.7 for ODOT.

Partnering Workshop. The *most effective/useful* partnering workshop activity for ODOT personnel (29%) was "getting to know the project team in a relaxed manner." For contractors, it was setting "mutual goals" (31%). Conversely, the *least effective/useful* workshop activity for both contractor (29%) and ODOT (38%) respondents was development of a "mission statement."

Over three-quarters of the ODOT respondents (77%) reported that the goals and values created in the workshop are carried out in the field "always," "most of the time," or "sometimes," as compared with 88% percent of the contractors. Only 50% of the total respondents (174) had participated in a follow-up workshop. Of those, 40% of the contractors thought the follow-up workshops contributed "a lot" to the project's success, compared to only 29% of the ODOT respondents.

Beneficial Outcomes of Partnering. Contractors, to a slightly greater degree, believe that partnering improves communication between their project team and ODOT's. Eighty-one percent of the contractors and 67% of ODOT respondents believed that partnering improves communication "a lot" or "some" between the two parties. Similarly, a majority in both groups said partnering improves trust between the two parties "a lot" or "some" (64% of contractors and 53% of ODOT respondents).

Contractor and ODOT respondents also believe that partnering enhances teamwork between the two parties. Seventy-six percent of the contractors, and 63% of ODOT's personnel indicated that partnering improves teamwork between the two parties "a lot" or "some."

Dispute Resolution (DR). One hundred respondents (72 ODOT and 28 contractor) had experience with the DR process. The majority of contractor and ODOT respondents thought the

process helped resolve disputes more swiftly. The majority of contractors (64%) said they had experienced lower claims costs when the DR process was used, while only 40% of the ODOT respondents said so. However, a slight majority of ODOT respondents (51%) gave a "good" or "excellent" rating when asked: "How well, overall, did the dispute resolution process work?" Only 28% of the contractors rated the process either "good" or "excellent." Yet when asked: "To what extent has the DR process for partnered projects helped the project team make good decisions?", 78% of the contractors said "a lot" or "some." A lesser majority of ODOT respondents (59%) also chose the "a lot" or "some" categories when answering this question.

Comparing Partnered and Non-partnered Projects. There were distinct differences between the contractor and ODOT responses to this series of questions. The majority of contractors (60%) felt partnering improves quality, whereas 34% of ODOT respondents believed so. Eighty percent of the contractors said partnering helps empower the project team to make needed decisions, compared to 56% of the ODOT respondents. A large majority of contractors (83%) believed partnering improves the project team's ability to meet schedules, while only 53% of the ODOT respondents thought so. Also, 71% of the contractors answered "yes" when asked if partnering reduces the number of claims on a project, compared to 49% of the ODOT respondents. When asked if partnering reduced the size of claims, again, most contractors answered "yes" (67%), compared to less than half for ODOT (47%).

Factors to Consider When Deciding When to Partner. Of the four factors suggested (project size, schedule and duration, previous partnering experience, and urban or rural project location), three were chosen by a majority of all respondents. Eighty-one percent of the respondents said project size should be considered as a factor. Also, 60% believed a project's schedule and duration should affect whether an ODOT project is partnered. On the third factor, previous experience working with each other's project team, 54% of the respondents felt this factor should be considered as well.

Measuring the Effectiveness of Partnering. Respondents were asked if any of nine indicators presented (number of change orders, cost growth, time extensions, etc.) were good measures to gauge the effectiveness of partnering. Based on the responses, only three of nine indicators were viewed as an accurate indicator of partnering's effectiveness by a majority of respondents. They were: (1) time to resolve escalated issues; (2) number of claims; and (3) claims cost.

Extent to Which Partnering is Beneficial. Only 31% of ODOT respondents felt that partnering has been "always" or "most of the time" beneficial to the Department. Conversely, 43% of the contractors believe that partnering has been beneficial to them "always" of "most of the time."

Recommended Improvements. "Establish good communication" was a technique used by most respondents for obtaining commitment from others to partner. Other techniques cited include: (1) be committed to the initial partnering charter; and (2) cooperating with your partner.

Some of the aspects of partnering that have worked well included:

- Getting to know partners;
- Developing channels of communication; and
- Problem solving.

A variety of issues were cited when respondents were asked: "What aspects of partnering presented challenges?" These included: (1) dispute/conflict resolution; (2) overcoming animosity/differences; (3) commitment to partnering; (4) negotiations/money matters; (5) communication; (6) honesty/trust; and (7) false expectations of partnering.

Respondents were asked to identify ways or techniques to improve partnering. There was no consensus on one particular technique. However, the most frequently cited suggestion (12% of the respondents) dealt with more workshop time or follow-up workshop sessions. Suggestions for a stronger commitment to partnering were also made. Interestingly though, ten respondents suggested a more informal setting or shorter workshops. Additionally, ten people suggested eliminating partnering altogether.

5.0 CASE STUDIES OF PARTNERING ON ODOT PROJECTS

Twelve projects were selected for a detailed case study to investigate the characteristics of both successful and unsuccessful partnering efforts. These twelve projects spanned the range from very successful to very unsuccessful examples of project partnering.

5.1 CASE STUDY METHODOLOGY

The Partnering Work Group, serving as the research project Technical Advisory Committee (TAC), selected 12 case study projects from a larger base of partnered ODOT projects. The projects were selected in an attempt to provide a varied and representative mix of project types and sizes, covering a broad spectrum of overall partnering results ranging from very successful to very unsuccessful. Using input from ODOT project managers and the Partnering Work Group, six projects were selected as examples of successful partnering efforts, while another six were chosen as examples of unsuccessful partnering efforts. These 12 projects are listed in Table 5.1.

Table 5.1: Projects Selected for Case Studies

Successful Partnering	Unsuccessful Partnering
Crooked River Gorge Bridge	Bend Parkway Unit 3A
6th St/7th St. Couplet (Grants Pass)	Linn Road - Dutton Road
Evans Creek - Rock Point	Davis Slough Bridge
Pacific Hwy @ Hwy 217/Kruse Way (Unit 1)	Camelot Interchange -Sylvan Interchange Phase 1
Stafford Interchange – Wilsonville	Eddyville-Cline Hill
West 11th Ave. - NCL (Eugene)	Salemtowne-Orchard Heights

The data collection for the case studies began in January 2002 and interviews of key ODOT and contractor staff were completed in May 2002. The case study projects included those with contract award dates from February 1996 through mid-2000, with nine of the 12 projects having start dates in either 1998 or 1999. The earliest project completion date was in late 1999. At the time that this report was written, several projects remained open, pending final payment.

The case study projects were investigated using a combination of a 41-question survey and in-depth interviews. Two to four key persons (ODOT and contractor) from each project were identified to be surveyed and interviewed, including, at a minimum, the ODOT project manager and his/her contractor counterpart. Interviews were held separately with the contractor participants and the ODOT participants.

All participants completed the survey just prior to the more detailed interview. The survey questionnaire, contained in Appendix A, consisted of 41 statements in which the participants were asked to check their level of agreement or disagreement using a Likert-type answer scale. The answer categories were:

Strongly disagree / Disagree / Undecided / Agree / Strongly disagree

A numerical value was assigned to each category, from *5* for "strongly agree" to a *1* for "strongly disagree." A *3* represented "undecided." Respondents were to complete the questionnaire based on their experiences on the specific case study project.

To use an example, the second question on the survey asked participants to check the category of level of agreement/disagreement on this statement: *The partnering on this project was successful.* A score of "5" indicated the respondent strongly agreed with the statement that partnering was very successful.

The survey responses were pooled together from all participants and evaluated to determine what attributes of partnering correlate with partnering success. The interview results were reviewed as well, and studied for identification of common threads and problem areas. The responses to each survey question were also evaluated for further indications of general strengths and weaknesses in the partnering efforts.

As noted earlier, the original intent was to review six "successfully partnered" projects and six "unsuccessfully partnered: projects. However, after review and evaluation of the survey results, particularly question 2, (*The partnering on this project was successful*), one of the projects that had been initially classified as "marginally unsuccessful," (*Davis Slough Bridge*) was determined to be "marginally successful."

Table 5.2 shows the revised list of "successfully" and "unsuccessfully" partnered projects. These projects are listed in order from most successful to least successful, based on the ratings given on question 2 by the interviewees.

The "average partnering success rating" represents the average value of the ratings given by the ODOT and contractor representatives surveyed and interviewed for that particular project. A 5.0 rating would represent a completely successful partnered project and a 1.0 rating would indicate a completely unsuccessful project. A rating of 3.0 represents the break point between unsuccessful and successful partnering. The partnering health index (PHI) values contained in the last column of the table are discussed in Section 5.3.3 of this chapter.

In addition to the survey data and interviews, contract data for these projects were extracted from ODOT Construction Section's contract database ("Cservice" Microsoft Access database). Using the contract data, comparisons were made between successfully and unsuccessfully partnered projects. These comparisons are discussed in Section 5.2.

Table 5.2: Case Study Projects

SUCCESSFUL PARTNERING				
Project Title	**Contractor**	**Partnering Facilitator**	**Avg. Partnering Success Rating**	**PHI**
Pacific Hwy @Hwy 217/Kruse Way (Unit 1)	Kiewit Pacific	Pinnell – Busch	4.5	24.5
6th St./7th St. Couplet (Grants Pass)	Copeland Sand & Gravel	Pinnell – Busch	4.33	23
Evans Creek - Rock Point	LTM, Inc.	Pinnell – Busch	4.33	21.3
Crooked River Gorge Bridge	Kiewit Pacific	Hallmark Pacific Group	4	23.5
Stafford Interchange – Wilsonville	Ross Bros. Constr.	Pinnell – Busch	4	23
Davis Slough Bridge	Ross Bros. Constr.	Pinnell – Busch	3.75	19.5
West 11th Ave. – NCL (Eugene)	Wildish Constr.	Hallmark Pacific Group	3.5	20.5
UNSUCCESSFUL PARTNERING				
Project Title	**Contractor**	**Facilitator**	**Avg. Partnering Success Rating**	**PHI**
Eddyville – Cline Hill	Hamilton Const.	Pinnell – Busch	2.67	19.7
Salemtowne – Orchard Heights	Huffman – Wright	Hallmark Pacific Group	2.0	18.3
Camelot Interchange -Sylvan Interchange (Ph. I)	F. E. Ward	Hallmark Pacific Group	1.75	18.3
Linn Road - Dutton Road	LTM, Inc.	Pinnell – Busch	1.66	17
Bend Parkway - Unit 3A	Ross Bros. Constr	Hallmark Pacific Group	1.5	17

5.2 OBJECTIVE MEASURES OF PROJECT MANAGEMENT SUCCESS

Table 5.3 presents a comparison of project metrics derived from ODOT's completed projects database. Successfully partnered and unsuccessfully partnered projects are compared. All of these partnered projects were considered challenging projects requiring extra attention. Whether differences in project results can be attributed to differences in partnering success or vice versa is impossible to determine. The differences are worth noting, however.

It may be seen from Table 5.3 that original contract amounts for both successfully partnered and unsuccessfully partnered projects are similar. However the cost growth, expressed as a percent of the original contract amount, is greater, on average, for the unsuccessfully partnered projects (20.2% vs. 5.9%). On average, the successfully partnered and unsuccessfully partnered projects were completed later than scheduled, but the magnitude of the average delay was greater for the unsuccessfully partnered projects.

Table 5.3: Comparison of Contract Management Metrics for Successfully and Unsuccessfully Partnered Projects

CASE STUDY CONTRACT DATA		
Item	***Successfully Partnered***	***Unsuccessfully Partnered***
Number of Contracts	7	5
Contract Amount at Award (Average)	$12,784,886	$14,825,143
Final Paid Amount (Average)	$13,543,375	$17,819,648
Difference (Average)	$758,489	$2,994,504
Cost Growth	5.9%	20.2%
Estimated Completion Date & 2nd Notice Date Difference (days)	187	302
Budgeted CE at Beginning of Project (Average)	$1,281,440	$1,363,557
Percent of Budgeted CE to Contract Award Amount	10.02%	9.20%
Final CE at the Project End (Average)	$1,057,358	$1,572,126
CE Difference (Average)	-$224,082	$208,569
Percent CE Difference (Budgeted to Final)	-17.5%	15.3%
# of Contracts with Liquidated Damages	3	2
Percent of Contracts with Liquidated Damages	43%	40%
Average Amount of Liquidated Damages	$17,933	$25,800

CE (Construction Engineering) is ODOT's project administration cost after the date of contract award. Although the successfully partnered projects had CE budgeted slightly higher than unsuccessfully partnered projects (10.0% vs. 9.2%), at project completion, the successfully partnered projects had underrun their budgets by 17.5% on average, versus an overage of 15.3% for unsuccessfully partnered projects. Differences in liquidated damages between the two groups of projects are not noteworthy.

For whatever reason, the successfully partnered projects enjoyed better cost and schedule performance than the unsuccessfully partnered projects. The seven successfully partnered projects were less costly for ODOT to administer (actual CE percentage at completion) than were the five unsuccessfully partnered projects (8.3% vs. 10.6%).

5.3 CASE STUDY SURVEYS

5.3.1 Written Survey Methodology

As noted earlier, the written survey portion of the case study used a 41-statement questionnaire (see Appendix A). Responses were on a 5-point Likert scale from "Strongly Disagree" to Strongly Agree." The survey was administered at the start of each interview.

The first two questions on the survey asked respondents to rate project and partnering success on the project, with the remainder of the statements relating to various partnering behaviors and

project characteristics. The latter were initially taken from or inspired by a list presented in "Establishment of Critical Success Factors for Construction Partnering." *(Cheng et.al. 2000)*. Revisions were made and additional questions were added after the first case study interview.

Results of the surveys were compiled and subjected to regression analysis to determine those responses that had the best correlation to partnering and project success (measured by responses to the first two questions). Appendix B presents a complete summary of the survey responses.

5.3.2 Survey Results

Regression analysis of the survey questions showed the strongest relationship ($R = 0.82$, $R^2 = 0.67$) between successful projects and successful partnering (questions 1 and 2). Cause and effect cannot be determined, but there is a statistically significant strong positive relationship in this database between successful projects and successful partnering.

Since the objective of the case studies was to determine what factors are associated with successful partnering, the correlations between partnering success and the questions relating to partnering behaviors and project characteristics were of most interest. Individual survey questions were identified that appeared to correlate well with partnering success. These questions are listed in Table 5.4 below, along with the critical success element that seems to be involved, and the regression analysis R^2 value that indicates the strength of the correlation. An R^2 threshold of 0.35 was arbitrarily set and used to select the list of survey questions with the best correlation. For the reader's information, an R^2 value of 1.0 indicates perfect correlation.

Table 5.4: Survey Questions with Good Correlation to Partnering Success

Survey Question	Critical Success Factor Indicated	R^2 value (>0.35)
6. Our partners provided us with sufficient information to successfully execute the project.	Information sharing	0.61
7. When we needed relevant information for executing our work, our partners were always helpful.	Information sharing	0.46
8. Our partners always kept us informed about events or changes that may have affected us.	Coordination	0.37
10. Our partners were highly trustworthy	Trust	0.58
14. We felt that we did not get a fair deal from our partners.	Fairness	0.50
15. Our partnering relationship was marked by a high degree of harmony.	Cooperation	0.44
16. We believe that our partners were committed to the partnering relationship.	Commitment	0.60
24. Our partners established good contact with us to avoid any misunderstanding.	Coordination	0.37
26. Our activities with our partners were well coordinated.	Coordination	0.52
35. Our partners praised our successful completion of tasks.	Cooperation	0.38
39. Given the opportunity during the project, I would have withdrawn from the voluntary partnering agreement.	Overall Satisfaction	0.42

5.3.3 Partnering Health Index (PHI)

The questions from Table 5.4 served as the basis for construction of a tool to periodically review partnering health on partnered projects. The questions on the case study survey with the highest R^2 value for each critical success factor were incorporated into the tool. They were expressed in present tense and a scale of 1-5 was added. To produce one single measure of partnering health, scores for the seven questions are totaled. This total is the "partnering health index," or PHI. The maximum possible score is 35 (7 x 5) and the minimum possible score is 7 (7 x 1). Figure 5.1 shows the form used for computing PHI.

COMPUTING YOUR PARTNERING HEALTH INDEX (PHI):

Please circle the response that best represents your level of agreement with each statement. (Questions were reproduced from, or derived from, "Establishment of Critical Success Factors for Construction Partnering," JOURNAL OF MANAGEMENT IN ENGINERING, March/April 2000, by Eddie Cheng, Heng Li, and P.E.D. Love.)

	Strongly Disagree		Neutral		Strongly Agree
1. My partners are providing adequate information to execute the project.	1	2	3	4	5
2. I believe that our partners are committed to the partnering agreement.	1	2	3	4	5
3. Our partners our highly trustworthy.	1	2	3	4	5
4. Our activities with our partners are well-coordinated.	1	2	3	4	5
5. I believe that we are getting a raw deal.	5	4	3	2	1
6. Our partnering relationship is marked by a high degree of harmony.	1	2	3	4	5
7. Given the opportunity, I would withdraw from the voluntary partnering agreement.	1	2	3	4	5

Total the numbers of your circled responses and record in the box. ☐

Average the scores for each team member surveyed. This is your projects Partnering Health Index (PHI).

Each month, plot the average score on the control chart posted on the job trailer wall.

Figure 5.1: Partnering Health Index (PHI) Computation Form

To provide early warning of deterioration of the partnering process, it is recommended that each ODOT and contractor team member routinely complete the form and total the score. These totals are averaged to determine the project's PHI. The PHI should be tracked on a run chart posted prominently in the job trailer to show trends. Figure 5.2 shows an example of a control chart for tracking PHI.

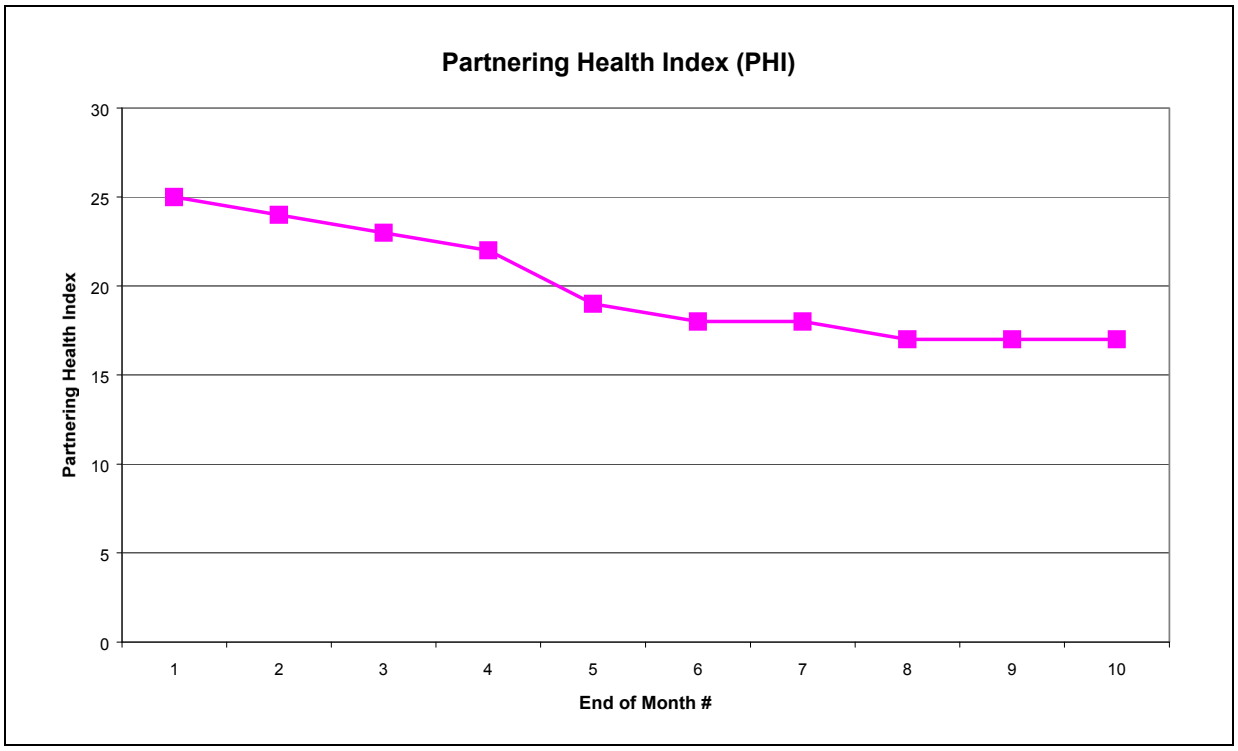


Figure 5.2: PHI Control Chart

What PHI is a good value, and what number should cause concern? To answer this question, PHI's were retroactively calculated for the 12 case study projects. Responses for the seven questions for each of the case study projects based on the evaluations provided in the written surveys supplied by key contractor and ODOT participants after project completion were used. The PHI's for each project are shown in the last column of Table 5.2. PHI's for successful projects ranged from 19.5 – 24.5. Scores for unsuccessful projects ranged from 17 – 19.7. Only one project with a PHI <20 (Davis Slough) was classified as a successfully partnered project. It is speculated that PHI's measured earlier in the life of the unsuccessful projects would have been higher. On a project with unsuccessful partnering, it is expected that the last PHI would be the lowest. Because of this expectation, and because a neutral score (7 x 3) would be 21, it is recommended that the warning flag be raised when the PHI approaches 21. Clearly, scores in the teens indicate partnering problems. All of the unsuccessfully partnered projects, and two of the seven successfully partnered projects, had scores less than 21 computed retroactively after project completion.

5.3.4 Other Survey Findings

The survey also identified specific questions for which the overall responses were either generally positive or generally negative. Table 5.5 below lists survey questions for which the average contractor or the average ODOT response was greater than 3.5 of 5, indicating a generally positive performance rating. Table 5.6 lists survey questions for which the average contractor or the average ODOT response was less than 2.5 of 5, indicating a generally negative performance rating. The average ODOT and contractor responses are given for each question in

these tables, with bold typeface for questions where both groups had an average response beyond the selection threshold. Note that these are overall average responses, including all the case study projects of both successful and unsuccessful partnering efforts.

Table 5.5: Case Study Survey Questions Indicating Factors Enhancing Partnering

Survey Question	Average Responses when one or both responses were > 3.5 on a Scale of 1 to 5	
	ODOT	**Contractor**
3. Top management showed their support for the formation of partnering by providing us with sufficient resources, including money, time, manpower, and authority.	3.30	3.63
4. Top management assigned a senior executive who represented our organization in dealing with partnering matters.	3.10	3.69
9. It was expected that any information that might help the other party would be provided.	3.55	3.25
11. We wanted to establish a relationship of trust with our partners.	**4.25**	**4.25**
12. We believed that trust established between organizations is critical to the partnering relationship.	**4.55**	**4.13**
17. We were highly committed to what we promised our partners.	3.40	3.94
18. Partnering team members possessed effective communication skills.	3.55	3.31
20. The Partnering workshop(s) was/were organized to facilitate communication.	**3.79**	**3.56**
21. Partnering workshop(s) resulted in a clear understanding of shared goals, in terms of specific, measurable results.	3.18	3.56
22. Partnering workshop(s) resulted in a clear understanding of the rights and responsibilities of both partners.	3.29	3.88
25. We would contact our partners when things were not clear.	**3.90**	**3.88**
28. We knew what we were supposed to be doing with respect to the partnering processes.	**3.60**	**3.81**
36. We fulfilled our task commitments, meeting our partners' expectations.	3.00	3.56
38. Our organizational goals are in line with partnering goals.	**3.50**	**3.56**
41. The quantity of informal and/or verbal communication on this project was high.	3.88	3.44

Questions 3, 4, and 17 of Table 5.5 indicate that contractors hold a slightly more positive opinion of their commitment to promises to their partners, and of their management's commitment to partnering, than do the ODOT respondents. Also, question 36 indicates that (even though still low, at 3.56) contractors feel better about their performance in meeting commitments that do the ODOT respondents. This is in line with the generally more positive partnering attitude of contractors, as indicated in the OSRL telephone survey reported in Chapter 4. However, question 38 indicates that both groups feel their organizations' goals are in line with partnering, which is a positive sign for future improvement.

Questions 11 and 12 of Table 5.5 indicate that both groups feel strongly that trust is desirable and critical to partnering. This feeling is apparently justified, given the high correlation found between trust and partnering success (see question 10 in Table 5.4).

Questions 18, 20, and 25 indicate that while communication skills may need more work, the partnering workshops did address this area and communication did occur when necessary. In particular, question 41 indicates that both groups feel cautiously optimistic that informal and verbal communication is high, with ODOT rating this area slightly higher than do the contractors. On the other hand, neither group rated other aspects of the partnering workshops particularly high in questions 21 and 22. Contractors were generally more satisfied with the generation of specific and measurable goals and with the definition of rights and responsibilities than was ODOT. Interestingly though, both groups indicated in question 28, that they felt they knew what they were supposed to be doing in their partnering effort.

Table 5.6: Case Study Survey Questions Indicating Factors Inhibiting Partnering

Survey Question	**Average Responses when < 2.5 on a Scale of 1 to 5**	
	ODOT	**Contractor**
15. Our partnering relationship was marked by a high degree of harmony.	2.45	2.75
19. The Partnering workshop(s) made a major contribution to our partnering effort.	2.44	3.06
31. The partnering facilitator met with the team routinely during the course of the project.	**1.85**	**1.94**
33. Our partnering team used benchmarking to improve performance.	**1.80**	**2.25**
34. There was a mechanism in place for the partnering team members to give feedback on the partnering process.	2.80	2.44

Table 5.6 provides strong indications that attention to partnering may peak in the early stages of a project, but wane later on. Questions 31 and 33 clearly showed that facilitators are not utilized much beyond the partnering workshop, and that benchmarking is not used either. Also, according to question 34, neither group felt there were significant opportunities to provide feedback on partnering performance.

5.4 CASE STUDY INTERVIEWS

5.4.1 Interview Approach

Appendix C contains the script used to guide the case study interviews. The format of the interviews was designed to first define the interviewee's concepts of project and partnering success and to gather general information on their experiences with ODOT project partnering in general. Next, the interview focused on the specifics of the particular case study project. Finally, the interviewee was asked to provide any additional information not already covered.

The intent throughout was to provide enough structure to ensure a productive discussion, but with complete flexibility to depart from the format to get the full story of the partnering experience. In many cases, the interviewee preferred to tell the story of the project in more of a chronological style, instead of the more topical format of the interview script. Some attempt was made to keep the discussion focused on the partnering aspects of the project, without delving too deeply into the technical aspects unless this was necessary to understand the context of the partnering issues.

In addition to the ODOT and contractor representatives, the companies that provided partnering workshop facilitators were also contacted. One interview was done with each of these two companies. These sessions essentially supplemented the ODOT and contractor interviews, confirming partnering challenges and discussing ideas for improving the partnering workshops. Opportunities for ongoing facilitation and for "re-partnering sessions" and other partnering recovery efforts were also discussed.

Interviews were conducted separately with the ODOT project representative(s) and with prime contractor representative(s). The ODOT interview involved the project manager who completed the project and additional members of his or her team, as deemed appropriate. These additional team members most often included assistant project managers and lead inspectors. For two of the case study projects, the responsible ODOT project manager had retired. For these two projects, the ODOT area manager for that area participated in the interview instead, along with the project lead inspector.

In most cases, the ODOT interviews were held prior to interviewing the contractor representatives, and appropriate contractor contacts were identified at that time. In a few cases, contractor contacts were identified before the ODOT interview and they were interviewed first, as scheduling expediency dictated. No conflicts were apparent from using this method.

5.4.2 Interview Results and Key Issues Affecting Partnering Success

Drawing conclusions from case study interviews is a subjective exercise. However, some common responses did seem to resonate throughout the study. In some cases, these "common threads" are also reflected in the survey results summarized above and in Chapter 4. Also, note that some of these "common threads" are identical to the critical success factors cited by Cheng and others *(2000)*, such as adequate resources, management support, and commitment. Others involved more specific aspects of ODOT projects which either presented challenges for partnering or helped partnering succeed.

The following is a summary of these key issues affecting partnering success.

5.4.2.1 Project Staffing Stability

Staff changes at critical times can devastate partnering efforts. Furthermore, repeated staffing changes also threaten partnering's viability. These situations affected several of the projects in this case study. In one case, the ODOT project manager announced his

departure from the team at the partnering workshop. In others, contractor superintendents changed frequently throughout the project.

These disruptions to project and partnering staff continuity were present in nearly all of the unsuccessful partnering efforts. In some cases, it appeared possible that personnel left or revolved through the project after it was already in trouble. In other cases, the personnel changes seemed to be a significant cause of the partnering failure.

5.4.2.2 Fundamental Engineering Design and Specification Quality

Serious flaws in design and/or specifications came up repeatedly in the study cases. In one case, the original survey data upon which the design was based was not representative of the actual "on-the-ground" topography. In other projects, alignments and interfaces to surroundings were flawed. This study did not focus on the details of the actual technical issues, and as such, particular details of the individual problems may be disputed, but in seems clear that design errors/omissions were present in the contract plans and specifications. Of the 12 projects in the case study, at least seven were cited by the participants as having design errors. It is noteworthy that these seven projects included all five of the unsuccessful partnering efforts.

Sometimes design problems were so significant that they overwhelmed the projects, destroying the partnering effort. In other cases, however, the crisis was manageable. Additional resources were scrambled and priorities were adjusted to support the project schedule and the partnering effort. But when resources were not adequate to overcome the burden that these errors created, partnering was challenged. On some projects, contractors openly admitted that in the face of plans that were constantly changing or were inadequate, and where they doubted their delay claims would be considered favorably, they largely gave up trying to anticipate and plan ahead.

5.4.2.3 Incomplete Prerequisite Work

In some projects, problems were caused when projects were started prior to completion of an earlier phase, e.g. utility relocation. If the work became delayed early in the project, the resulting impact on the partnering effort was often devastating, as trust and motivation to coordinate were destroyed. Once again, the project management and partnering efforts were often overwhelmed in these situations, before they had a chance to gain a foothold within the team.

5.4.2.4 Partnership Monitoring, Maintenance, & Management Support

Other than routine project status meetings, regular routines for monitoring partnering performance were seldom evident in the cases studied. At these project status meetings, partnering performance was typically not directly addressed, with the focus instead on project specific issues and problem solving. One project of the 12 was a notable exception, as periodic partnering review sessions were held with the partnering facilitator, and an executive oversight team was established and kept informed on project issues.

This project was ultimately rated the most successful partnering effort of the 12 cases studies.

On some other projects, project managers met periodically and informally to discuss partnering issues, either within their own organizations or with their counterpart. Unfortunately, these informal efforts were rarely, if ever, documented and when unfruitful, they were often dropped.

Survey questions no. 31 and 33 (Table 5.6) also indicate weakness in this area. In responding to the statements, "The partnering facilitator met with the team routinely …" and "Our partnering team used benchmarking …" respondents generally disagreed.

No clear program seems to exist within the ODOT partnering effort, or with most contractors, to formally monitor or maintain partnering relationships after the partnering workshop is complete. Those informal practices that are used don't necessarily escalate partnering issues for assistance from higher levels when appropriate.

Some interviewees expressed a clear interest in having more clearly defined avenues for conveniently obtaining assistance with partnering issues when they first begin to crop up. In the worst partnering failures, there was no clear indication that upper management from either party made attempts to respond to or intervene in the situation. It was also unclear whether project team members were comfortable in asking for support, or whether they knew where to turn for facilitation resources. In some cases, "re-partnering workshops" were held, but these were often attempted long after relationships were severely damaged and when failed trust was irreconcilable.

5.4.2.5 Handling Past Track Record Issues

A perception, on the part of either ODOT or the contractor, that their counterpart has a poor past track record in project partnering can sabotage the partnering effort unless this potentially difficult situation is successfully confronted by both parties at the start. On one successfully partnered project, this occurred. The issue was openly confronted early in the project; commitments were made to avoid anticipating negative outcomes; and team members were counseled when behaviors violated these commitments.

In other study cases, negative expectations were never confronted and either past poor performance was repeated, or the self-fulfilling prophecy was played out. In either case, the partnering effort was seriously damaged by this issue. In some cases team staffing assignments were carefully made with sensitivity to this issue, reducing the potential impact.

Table 5.7 provides a list of recommended tactics for dealing with a partner with a reputation for poor performance. This list was developed based on information from the case study interviews.

Table 5.7: Recommended Tactics in Dealing with Partners with Poor Partnering Track Record

1. Keep an open mind and avoid assumptions of repeat performance.
2. Remain professional in responding to situation.
3. Be proactive – look down the road and anticipate potential problems on both sides.
4. Confront the situation.
5. Continue to cautiously offer to work together.
6. Enforce the contract.
7. Increase emphasis on formal documentation of issues, agreements, and expectations.
8. Fight for adequate resources to allow the above activity.

5.4.2.6 Enforcement of Contractual or Partnering Commitments

In some of the case study interviews, respondents indicated that they had failed to enforce contractual obligations on their partners, and this led to partnering breakdowns. In other cases, weak enforcement involved partnering commitments instead of contractual ones. For example, if a partner failed to fulfill a commitment or achieve an agreed-upon objective, no explanation was required. Sometimes the problem seemed to stem from a reluctance to further jeopardize an already weak partnering relationship. Other times, the manager or superintendent was simply overwhelmed by the project due to lack of resources, plan failures, excessive project workload; or was intimidated by an imbalance in bargaining power. This may indicate opportunities for training in assertiveness skills and/or the value of additional project review resources and consulting opportunities.

5.4.2.7 Utilizing Third Party Neutrals

In one case study project, a neutral third party was assigned who operated at the project level to help resolve disagreements or conflicts without impacting the project schedule or threatening the partnering effort. On the more visible projects, upper management and/or public attention may have effectively operated as the "third party neutral," putting pressure on the partners to find agreement and keep the project moving.

5.4.2.8 Adequate Resources

The issue of adequate support, and project management and partnering resources is at the root of many of the issues discussed previously. In some cases, resources were stretched thin due to an overload in the number and size of projects. In other cases, the project's demand on resources escalated, due to unforeseen conditions or design errors, thus stretching the organization's capacity to respond to the limit.

On a number of occasions, conflict occurred when ODOT representatives viewed a situation as one where the contractor had underbid the project, and was unwilling to apply the required resources. Meanwhile, the contractor felt the contract called for additional

payment for work outside the original scope of the job. This classic conflict over interpretation of contract requirements often challenges partnering to the limit.

If a contractor has underbid the job, the partnering arrangement is at risk, particularly if the contractor is in a financial position where execution of the project could result in bankruptcy. For a small contractor, the way of life of the company owner and his or her family may be in jeopardy. The contractor's survival instincts will take precedence over commitments made in a partnering workshop. In such a situation, the contractor is likely to follow through on partnering commitments only if the commitments help the company stay solvent.

5.4.2.9 Commitment to Partnering Concepts

Both parties must be committed to efficiently completing the work and to sincerely help their partner meet their goals, in ways compatible with their own. This is the essence of project partnering, but it remains an unfulfilled ideal if specific goals and commitments are not established and negotiated at the initial project workshop and throughout the project, and if performance in relation to these goals is not monitored and managed. Significantly, it is the other party's perception of their partner's commitment to the effort that appears to make the difference. In other words, great benefit accrues when the "I got a raw deal" response is avoided. When one's partner perceives a commitment to partnering, their commitment to partnering also is enhanced. This is not to say that actual results are less important than perception, but rather that real results must be achieved *and* these results must be recognized.

But commitment to this ideal at the project level is unlikely to be consistently achieved unless both partners' organizations also live up to the ideal. If one or both project partners cannot get support from within their organization, in the form of resources, support, and consistent attitudes, their efforts are very likely to fail. Despite the generally positive response by both contractors and ODOT participants to survey question number 38 ("Our organizational goals are in line with partnering goals."), these cultural values appeared to be weak in many of the partnering efforts.

The project manager and contractor commitment to partnering, along with adequate time to stay familiar with relationship status at all levels within the team, and to the perceptions generated, are keys to success. Team members must also be willing to make commitments to specific tasks and they must fulfill those commitments in order to build trust and develop the partnership. Furthermore, both contractors and project managers share concern about situations where their counterparts are not given adequate authority to make decisions at their level.

Far and away, the most significant demand of contractors in these case studies was for a rapid and coordinated response from ODOT on issues that come up during construction. Contractors repeatedly cited unrecoverable losses that result from delays and uncertainty in project plans. On one successfully partnered project, the contractor praised ODOT's frequent ability to respond in less than 24 hrs with coordinated decisions that were not

overruled later. On another successfully partnered project, ODOT was again praised for relinquishing their right to a 30-day response window on certain issues, and for aggressively committing the resources to resolve design issues within the limited float in an accelerated schedule.

5.4.2.10 Respect and Courtesy

Respect, courtesy, and sensitivity to counterparts' needs are keys to good partnering relations. "Heads-up calls" prior to harsh written communications, sincere attempts to aid counterparts with problems that could otherwise be ignored and relegated to them, careful listening and creative flexibility to help, are all examples of the kind of exceptional cooperation that leads to successful partnering. It also builds a stockpile of goodwill and trust that yields results on future, unrelated obstacles to partnering. These practices were cited on many of the of successfully partnered projects.

5.4.2.11 Project Visibility and Attention

Within the 12 case study projects, the more visible, more publicized ones seemed to consistently result in better partnering performance. Some of this effect is undoubtedly due to the additional management focus that these projects generate, both within ODOT and with the contractor. But these projects also generate more commitment from the partnering team itself, further supporting the contention that partnering commitment is a key to success.

5.4.2.12 Effective Partnering Workshops and Facilitation

A well-organized and appropriately staffed partnering workshop can be very effective in preparing for a challenging project. However, this requires serious effort and attention to careful planning and preparation by both parties to the partnership. Throughout the case studies, initial partnering workshops varied in their quality. Many were not properly organized to be project specific, and attendance was often unfocussed and excessive for an effective teambuilding process. Often one or both parties were not properly represented or prepared. When attendance was not well thought out, a "shotgun" approach often seemed to prevail, resulting in very limited commitment and weak assumption of responsibility. Without clear and appropriate role assignments, and development of an atmosphere of faith in the team's potential success, it seemed that some of these workshops actually detracted from the partnering effort.

In the best sessions, participants were carefully chosen and the group size was limited. When the right people from the right levels in the organizations participated, better partnering and project goals were established and commitments to these goals were more pronounced and enforceable. In these cases, counterparts were identified at various levels and the relationships that were built between these individuals supported the partnering. In addition, these workshops provided a forum for top management from both ODOT and the contractor to establish expectations for partnering performance within the team.

Particularly on the more recent projects, the partnering workshops were sometimes abbreviated to ½-day to 1-day sessions. In some cases, participants felt that too little time was available for effective team building and project issue reviews. This was especially critical when the basic communication, diversity management, assertiveness, and dispute resolution skills were weak. Many felt that the fundamental partnering skills and understanding should be developed outside the project workshops, enhancing full workshop participation and allowing focus on the specific project issues.

Many participants cited or suggested the benefit of follow-up partnering workshops that could be scheduled early in the project, after some project-specific issues had come up. The participants thought that these added sessions could provide more hands-on training and could, in addition, serve as a project status check. They felt the follow-up session should be scheduled at that critical stage when partnering is most susceptible to irreversible failure from issue overload, personality conflicts, etc. If trouble is identified at this stage, and if management above the project team level also participates in its discovery, is seems more likely that many failed projects and partnerships can be avoided. Also, some participants suggested follow-up workshops at the start of a new construction season or whenever the partnership becomes unstable due to major personnel changes.

5.5 CASE STUDY SUMMARY

The case studies served to define 12 key areas influencing ODOT partnering success. These 12 issues are listed below in Table 5.8.

Table 5.8. Issues Influencing ODOT Partnering Success

Partnering Issues Commonly Cited in the Case Studies	
1. Project Staffing Stability	2. Fundamental Engineering Design and Specification Quality
3. Completion of Pre-Requisite Work	4. Partnership Monitoring, Maintenance, & Management Support
5. Handling Past Track Record Issues	6. Enforcement of Contractual or Partnering Commitments
7. Utilizing Third Party Neutrals	8. Adequate Resources
9. Commitment to Partnering Concepts	10. Respect and Courtesy
11. Project Visibility and Attention	12. Effective Partnering Workshops and Facilitation

Partnering seems to flourish when either no major issues come up on a project, or the early issues are small and manageable, and are followed only later by more complex and challenging ones. This seems to allow time for partners to build trust and establish the partnership. When projects are faced with major issues right away, the partnering relationships are often degraded or overwhelmed at the start, and may never recover. This is especially true where the situation is not proactively addressed, either because resources are not available, or because the situation is not immediately recognized or accepted.

A variety of project problems can trigger serious partnering difficulties. These include unresolved engineering and design errors, incomplete preparatory work, inadequate staffing and/or support resources, or frequently changing project team membership. Any one of these major disruptions to the project can overwhelm an already weak partnering effort.

Proactive steps by the partnering team, however, can serve to sustain the partnering effort and the project even in the face of these difficulties. Good partnering performance monitoring, effective management attention and support, and strong team commitment to the partnership can generate cooperation and build trust to sustain and even enhance the partnering effort. Availability of a trusted third party can further assist the team by quickly settling questions where they have "agreed to disagree;" allowing the team to focus on new challenges without bogging down.

Successfully overcoming partnering challenges can build pride within the partnership that further enhances performance. Improving performance throughout ODOT's program will also improve commitment from both ODOT and contractor participants. By focusing attention on the key issues identified here, the opportunity exists to greatly improve ODOT's partnering program.

6.0 FACTORS TO CONSIDER WHEN MAKING DECISIONS ABOUT WHEN TO PARTNER

There are many factors that affect a decision about when to formally partner on a project, however, every project is different and has a unique set of circumstances relating to schedule, complexity, location, and scope of work. A "one size fits all" decision making process, such as a multi-stage decision tree or multi-criteria decision model is not considered necessary in order to make sensible decisions about when to partner. Rather than relying on a quantitative decision making process, a more desirable approach is the use of engineering judgment based on careful consideration of a number of pertinent factors. For this reason, seven factors have been identified for the decision-maker to consider when deciding whether or not to partner. They are presented below, along with related discussion that will help the decision-maker understand the characteristics of each factor he/she must consider to reach a sound conclusion about whether to partner or not.

Project Size – Between 1993 and 2001, there have been about 90 ODOT projects where formal partnering has been used. Adjusted to year 2002 dollars, the average award amount for these contracts has been $12.9 million. The contracts ranged in value from $1.3 million to over $43 million. The median contract award value (mid-point of the distribution) is slightly lower, at $10.4 million. The lower quartile contract award value of the partnered contracts distribution is $5.3 million. At this value, 75% of the partnered contract award amounts since 1993 exceeded $5.3 million. As a guidance for decisions about when to partner, Louisiana DOT uses a $5 million threshold for deciding when to partner *(McCrary et al. 1995)*. California Department of Transportation specifies that partnering should be offered on all projects over $1 million *(Caltrans 2000)*. Arizona DOT partners in some form on every contract *(Murdough 2001)*.

Complexity – The complexity of a project affects decisions about when to partner. Complexity is influenced by a number of variables including work type. In the past, ODOT has partnered much more on contracts that with structures work. Since 1993, 88% of ODOT's partnered contracts have included structures work, and only 12% included a combination of paving, grading, signage, and signal work. In addition to type of work, the number of stages that are associated with the construction can affect the complexity of a project. For example, a project requiring traffic control plans with multiple stages and phases within each stage is significantly more complex than a simple preservation project with straight line paving.

Another factor contributing to a project's complexity is the type of contracting used. ODOT has traditionally used firm-fixed price contracting to execute its construction program, but recently has started to use innovative contracting mechanisms such as design-build and A+B bidding. Although the intent of innovative contracting is to improve project delivery in terms of cost and schedule, its use does add to the complexity of a project. For instance, because of the added complexity, the Maryland State Highway Administration employs partnering on all of its design-build contracts *(Maryland State Highway Administration 2002)*.

Average Daily Traffic (ADT) – Mainline highway ADT on ODOT partnered projects has ranged from about 1,000 vehicles per day to over 140,000. The median value for ADT is 21,000 vehicles per day, and the mean is 35,000. Figure 1 graphically shows the ADT distribution of past partnered contracts (1993-2001).

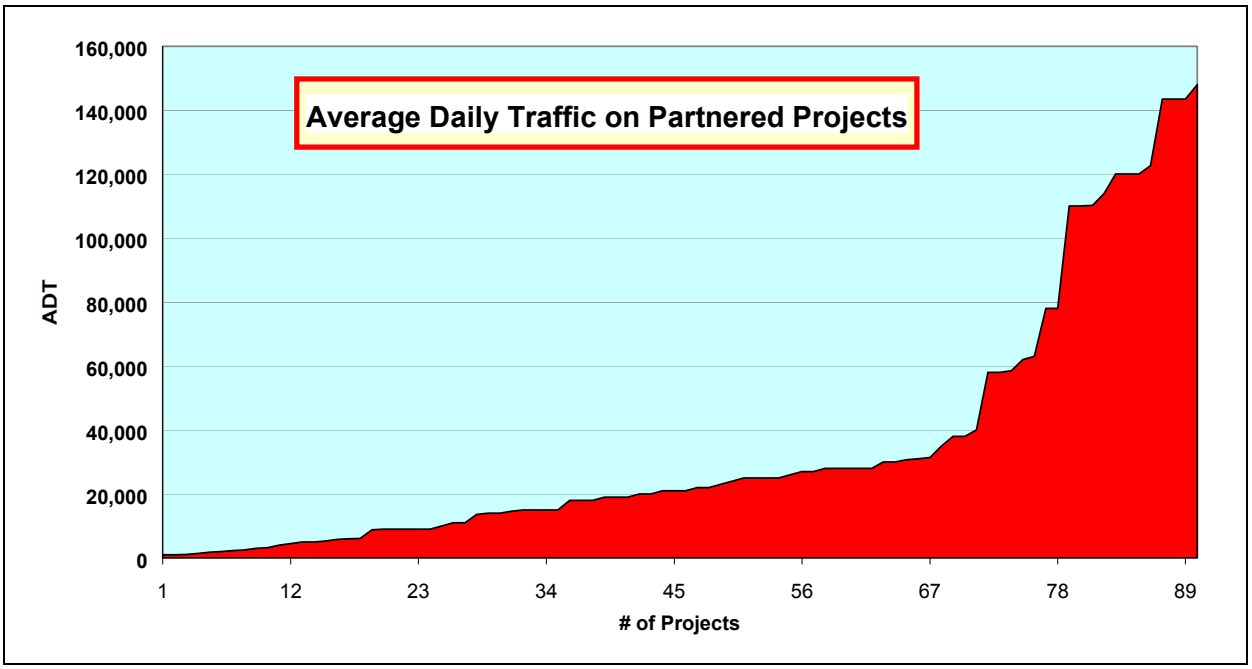


Figure 6.1: Average Daily Traffic on Partnered Projects (1993-2001)

Potential Cost Growth – A Washington DOT study conducted in the early 1990s found that cost overruns tend to increase with an increase in project size. However, the study indicated that cost overruns "cannot be readily modeled or predicted" *(Hinze et al. 1993)*. There can be circumstances that lead to additional change orders or quantity adjustments on a project. Potential causes can include unknown underground utilities or hazardous materials, complex staging, or "in-water" work requirements.

Additionally, on some projects, the design schedule must be compressed in order to meet a prescribed let date. Because of the accelerated design phase, the potential for design errors or omissions is greater. Another source of potential cost growth is the use of "innovative designs or technologies" in which new methods, technologies, or construction practices are employed on a project. In cases where design schedules are expedited for a project, or new technologies are tried, partnering should be considered as a mechanism to help mitigate the potential for change orders or disputes.

Project Schedule and Duration – Multi-year projects are more likely to be partnered. In the past, about 80% of ODOT's partnered contracts have spanned two or more construction seasons. Gransberg and others, in their evaluation of the Texas Department of Transportation's partnering program, recommended partnering on contracts with a duration greater than one construction season *(Gransberg et al. 1998)*. In Oregon, projects that spanned more than one construction

season can be attributed to the amount of construction work actually required, or it could be due to regulatory requirements, such as U.S. Fish &Wildlife/Oregon Department of Fish and Wildlife permits or clearance(s), or "in-water" work windows

Community and Transportation System Interest – Partnering should be considered if an ODOT project has high community interest. Those with high community interest can be described as projects with one or more of the following characteristics:

1. Has significant impact.
2. Affects some people more than others.
3. Affects a special interest or use.
4. Involves a subject that is already controversial.
5. Needs public support during construction.
6. Takes place in an urban area (more intersecting side streets, private driveways, and business accesses).
7. Takes places on a critical segment in the highway system where there are no alternate routes, such as a highway over the Cascades or one to a Coastal location.

Coordination between Multiple Parties – Frequently, during construction, several utilities may be involved, along with separate contractors for each utility. Sometimes the utilities can be relocated prior to the start of construction, but on longer duration projects with complex staging, utility relocation often must take place concurrently with the construction contract work. With many groups involved, there is a greater requirement for scheduling and coordination among all parties. Additionally, local governments and special districts could also be involved during the construction phase, including cities, counties, school districts, municipal and utility districts.

7.0 SUMMARY OF FINDINGS AND CONCLUSIONS

This research project was undertaken to improve the effectiveness of partnering on ODOT projects. Information was gathered through literature review, survey of other Departments of Transportation within the U.S., survey of ODOT project managers and general contractors doing business with ODOT, and in depth surveys and interviews with key management personnel involved on twelve ODOT projects executed with formal partnering between 1996 and 2002. Previous chapters have discussed these data-gathering efforts and presented results of analysis. This chapter summarizes conclusions reached from review of all data-gathering efforts.

Evidence in the literature indicates that partnering can have a positive effect on project success by speeding conflict resolution and reducing claims. This positive effect is generally attributed to improvements in project operations resulting from better communication, better teamwork, increased trust, and stronger relationships.

Analysis of all information obtained in this study leads to the conclusion that successful partnering on transportation projects is characterized by the following:

1. Strong demonstrated commitment from the highest levels of transportation agency management.
2. Partnering policies and procedures set by cooperative leadership teams composed of transportation agency and contractor organizations.
3. Availability of education and training programs and of staff support for partnering and dispute resolution issues.
4. Projects that begin as formal partnerships.
5. System for measuring partnering performance.

Successful partnering initiatives from other state DOT's include the following:

1. Arizona DOT (ADOT) includes in its Construction Manual partnering principles and descriptions of what it means to be a resident engineer, inspector, etc. in a partnering environment.
2. ADOT has developed a Partnering Evaluation Program (PEP) to evaluate partnering and project performance.
3. Caltrans has produced a video to train field personnel and crews on the reasons for, and the benefits of partnering.
4. The Maryland State Highway Administration (SHA) has developed a rating form to be used for monthly evaluation of partnering and project success.
5. SHA has contracted for training on partnering and project management to be available to SHA, contractor and design consultant personnel.
6. A joint committee of Kansas DOT and contractors has developed and conducted training for contractor and KDOT personnel.

7. Texas Department of Transportation provides awards for well-partnered projects.

Determining the impact of partnering on the success of ODOT's projects' success was not an objective of this research. Rather, data gathering and analysis focused on improving the way that ODOT does partnering. Thus, the conclusions presented below are the conclusions reached as to strengths, weaknesses, barriers to success, and opportunities for improvement associated with ODOT's partnering efforts.

7.1 STRENGTHS OF ODOT'S PARTNERING

1. ODOT's partnering efforts helped deliver some very successful projects. Recent examples of successful partnering are Pacific Hwy@ Hwy 217/Kruse Way (Unit 1), the 6th St./7th St. Couplet (Grants Pass), Crooked River Gorge Bridge, and Stafford Interchange-Wilsonville.
2. ODOT's partnering program is lean, with bare essentials provided for implementation on only high risk projects.
3. Significant numbers of ODOT project managers, and contractor owners and project managers, recognize the potential benefits of partnering and demonstrate commitment to make partnering work.
4. Most respondents to the ODOT/contractor survey see partnering:
    a. Improving communication (67% ODOT; 81% contractor).
    b. Improving trust (53% ODOT; 64% contractor).
    c. Improving teamwork (63% ODOT; 76% contractor).
5. ODOT/contractor respondents believe that the goals and values created in the partnering workshop are carried out in the field (77% ODOT; 88% contractor).
6. ODOT/contractor respondents cite the following aspects of partnering as working well:
    a. Getting to know partners.
    b. Developing channels of communication.
    c. Problem solving/dispute resolution.

7.2 WEAKNESSES OF ODOT'S PARTNERING

1. Partnering does not assure project success. Even with improvements in partnering policies and procedures, it is unlikely that partnered projects will be universally successful in achieving cost, time, quality, and safety goals. Partnering can not overcome all challenges provided by inadequate, incomplete, or erroneous design, inadequate completion of prerequisite work, problems with contractor bids or budgets, or inadequate ODOT or contractor resources.
2. Education and training programs for advancing partnering among ODOT and the contractor community do not exist.
3. To many, partnering is considered an event, the initial partnering workshop, rather than an ongoing process throughout the life of a project. Although ODOT's standard contract for partnering facilitators allows for facilitation throughout the project, this service is seldom utilized. The cost of facilitation is small compared to potential costs resulting from breakdown in the ability of ODOT and the contractor to work together effectively

4. The majority of respondents (54% contractor; 58% ODOT) reported seeing partnering used to advance one side's position over the other's. There is no obvious, effective way to deal with individuals or organizations that betray partnering trust. Thus, the fear of being taken advantage of makes it difficult to establish trust.

7.3 BARRIERS TO SUCCESS

1. Past negative experiences with partnering for some individuals make it difficult to approach partnering on new projects.
2. Only 31% of ODOT employees think partnering is beneficial "always or most of the time."
3. Survey results indicate that ODOT personnel do not view partnering as favorably as do contractor personnel in terms of improving quality, decision making, and schedule adherence, as well as reducing the number and size of claims.
4. Some individuals within ODOT and within contractor organizations view partnering as an aid in avoiding contractual obligations.
5. Inadequate resources for ODOT or for the contractor can strain projects beyond the point where even very effective partnering can be reasonably expected to save the project.

7.4 OPPORTUNITIES FOR IMPROVEMENT

1. Formal partnering, as currently practiced, relies on energy and commitments generated at the initial partnering/team-building workshop to carry through the duration of the project, with no additional support available. Provision of support services throughout the life of the project may enable successful partnering that would not otherwise be possible.
2. A key feature of successful partnering is speedy resolution of conflict and provisions for issue escalation. Limited experience with third-party neutrals shows promise as a method for facilitation of speedy resolution of disputes.
3. Operations on all ODOT projects can benefit from the ideals of partnering. Currently, only a small number of projects are identified to be formally partnered. In addition, ODOT is willing to support formal partnering when specifically requested by a contractor. If successful partnering can be implemented on all projects, greater benefit can be derived.
4. ODOT/contractor survey respondents found the following aspects of partnering to be most challenging:
    a. Dispute/conflict resolution
    b. Overcoming animosity/differences
    c. Commitment to partnering
    d. Negotiations/money matters
    e. Communication
    f. Honesty/trust
    g. False expectations of partnering

These issues will always provide challenges, but the challenges may be more effectively met if ODOT and contractor personnel are provided educational opportunities and coaching support from their organizations. ODOT's commitment to successful partnering is not reinforced through any type of organizational or project manager education and training programs. Provision of education for project managers, inspectors, and other key ODOT and contractor personnel has potential to improve the success rate for partnering.

5. Close-out, lessons-learned sessions are not a normal part of ODOT partnering procedures, so painful lessons learned are more likely to be repeated on subsequent projects. Implementation of a policy for conducting a "lessons learned" session at the conclusion of each partnered project shows potential.
6. Providing partnering awards would provide a way to reinforce management's commitment to successful partnering.

8.0 RECOMMENDATIONS

Review of the conclusions presented in the previous section leads to recommendations for future direction for ODOT's partnering efforts. These recommendations are presented below.

1. ODOT senior management should continue to show strong support for partnering, and whenever possible, strengthen that support.

2. ODOT and Associated General Contractors (AGC) leadership should clearly communicate to all responsible project personnel what partnering is, why it is important, and how it is to be implemented. In addition, at the beginning of each project, this message must be reinforced with project specific information.

3. Partnering principles should be practiced on all ODOT projects.

    a. As a minimum, whether formally partnered or not, the ODOT project manager or designee and contractor lead person should spend focused, uninterrupted, quality time reviewing critical quality, cost, schedule, traffic control, and public relations issues, to be documented with a memo listing items requiring greatest attention. This meeting should occur shortly before the pre-construction meeting.

    b. Formal, full-strength partnering should be utilized for all high risk, high value projects.

4. ODOT has done a good job of selecting projects for formal partnering. To assure that this success continues, and to possibly expand the benefits of partnering, the partnering project selection criteria presented in Chapter 6 of this report should be utilized to help determine what projects are selected for formal partnering. In addition, ODOT should continue to partner on any projects where formal partnering is requested by the contractor.

5. Formal (full-strength) partnering on each project should include the following:

    a. ODOT facilitator contracts should be structured to include the initial partnering workshop, *and* for on-going facilitation, as well as a close-out, "lessons learned" session.

    b. Each project should have a core project team and an executive oversight team. Typical core project team will include ODOT project manager, assistant project manager, and chief inspector, as well as the contractor and major subcontractor project manager, superintendent, field engineer, etc. Typical project executive team will include ODOT area manager, ODOT Contract Administration Engineer or designee, and general contractor owner or home office sponsor or senior manager. Also, a Federal Highway Administration representative should be included on high profile National Highway System projects.

c. In structuring the initial partnering workshop, the partnering facilitator must be sure to include all parties impacting the project, including utilities and local governments, while assuring that the project team, who will be working together on a daily basis, has enough quality time to candidly discuss critical quality, cost, schedule, traffic control, and public relations issues. External players and the executive team may be brought in subsequently for a briefing by the project team on these critical issues and the plan for addressing them.

d. Partnering should be continually monitored throughout the project life:

   i. Each weekly progress meeting should include partnering on the agenda, to assure that the opportunity is provided to raise partnering issues.

   ii. On a monthly basis, all members of the core team should complete the partnering health assessment form included in this report (see Figure 5.1). Their individual scores should be averaged, and a mean partnering health score should be calculated and posted on the partnering health control chart included in this report (see Figure 5.2). The control chart should be displayed prominently in a public area of the job site trailer (and on the project's website where applicable). This control chart will serve as an early warning system for declining partnering health.

   iii. The executive team should meet on site quarterly for a presentation from the project team on progress and critical issues, including partnering health.

   iv. A final close-out meeting should be held to record lessons learned from the project, including partnering lessons learned. The end of project acceptance report format should be modified to provide incentive for this to happen.

e. A mechanism to support timely issue resolution should be available to the project team. Possibilities include a third-party neutral or a three-person (ODOT/Contractor/Consultant) dispute resolution board, either project specific or across the entire breadth of ODOT projects.

6. If past negative experiences with partnering make it difficult to approach partnering on new projects positively, both parties should strive to overcome these barriers.

7. ODOT and contractor organizational culture must support partnering. Education and training are the logical tools for affecting cultural change.

   a. In the spirit of partnering, educational and training opportunities should be available in combined classrooms to both ODOT and contractor personnel.

   b. Education and training should include partnering expectations, attitudes, behaviors, and skills.

   c. Ideas for training modules and curriculum could be obtained from state DOT's with this experience (Arizona, Kansas, Maryland).

   d. The partnering facilitators could also be a training resource.

e. ODOT and AGC should jointly sponsor the training.

8. ODOT's construction contract database should be modified to identify whether projects have been formally partnered or not.

9. ODOT should explore ways to measure the effectiveness of partnering. Other state DOT's (e.g. Arizona and Maryland) have programs in place that track a variety of objective and subjective project measures in order to gauge their program's effectiveness.

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APPENDIX A

Case Study Survey Questionnaire

ODOT PARTNERING STUDY - **PROJECT SPECIFIC QUESTIONNAIRE**

PROJECT: _____

Name: _____

Title: _____

Specifically for this project, please check your level of agreement or disagreement with each of the statements below. The questions use the term "partner." On a partnered project, if you are an ODOT employee, your primary partner is the construction contractor. If you are a contractor, your primary partner is ODOT.

(Most of these questions were reproduced from, or derived from, "Establishment of Critical Success Factors for Construction Partnering," JOURNAL OF MANAGEMENT IN ENGINERING, March/April 2000, by Eddie Cheng, Heng Li, and P.E.D. Love.)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1. This PROJECT was successful for me and for my organization.					
2. The PARTNERING on this project was successful.					
3. Top management showed their support for the formation of partnering by providing us with sufficient resources, including money, time, manpower, and authority.					
4. Top management assigned a senior executive who represented our organization in dealing with partnering matters.					
5. Top management monitored the health of our partnership and intervened when/as appropriate.					
6. Our partners provided us with sufficient information to successfully execute the project.					
7. When we needed relevant information for executing our work, our partners were always helpful.					
8. Our partners always kept us informed about events or changes that may have affected us.					
9. It was expected that any information that might help the other party would be provided.					

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
10. Our partners were highly trustworthy					
11. We wanted to establish a relationship of trust with our partners.					
12. We believed that trust established between organizations is critical to the partnering relationship.					
13. We trusted that our partners' decisions were beneficial to our organization.					
14. We felt that we did not get a fair deal from our partners.					
15. Our partnering relationship was marked by a high degree of harmony.					
16. We believe that our partners were committed to the partnering relationship.					
17. We were highly committed to what we promised our partners.					
18. Partnering team members possessed effective communication skills.					
19. The Partnering workshop(s) made a major contribution to our partnering effort.					
20. The Partnering workshop(s) was/were organized to facilitate communication.					
21. Partnering workshop(s) resulted in a clear understanding of shared goals, in terms of specific, measurable results.					
22. Partnering workshop(s) resulted in a clear understanding of the rights and responsibilities of both partners.					
23. Our project effectively used conflict resolution techniques, such as joint problem solving, outside arbitration, and issue escalation to resolve conflicts.					
24. Our partners established good contact with us to avoid any misunderstanding.					
25. We would contact our partners when things were not clear.					
26. Our activities with our partners were well coordinated.					

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
27. Our partners and I spent the majority of our interaction around issues that were crucial to the project rather than on relatively minor and insignificant (or even trivial) issues.					
28. We knew what we were supposed to be doing with respect to the partnering processes.					
29. Our partnering team always developed novel ideas.					
30. The partnering team met frequently to discuss partnering related issues.					
31. The partnering facilitator met with the team routinely during the course of the project.					
32. Our partnering team was very interested in developing value engineering improvements.					
33. Our partnering team used benchmarking to improve performance.					
34. There was a mechanism in place for the partnering team members to give feedback on the partnering process.					
35. Our partners praised our successful completion of tasks.					
36. We fulfilled our task commitments, meeting our partners' expectations.					
37. Our organizational goals have no conflict with partnering goals.					
38. Our organizational goals are in line with partnering goals.					
39. Given the opportunity during the project, I would have withdrawn from the voluntary partnering agreement.					
40. The quantity of formal, written communication on this project was high.					
41. The quantity of informal and/or verbal communication on this project was high.					

APPENDIX B

Case Study Survey Responses

PARTNERING CASE STUDY SURVEY -- WINTER 2002

		Less successful partnering efforts																
		Bend Parkway - Unit 3A				Linn Rd. - Dutton Rd.			Camelot-Sylvan Interchge (Ph. I)				Eddyville-Cline Hill			Salemtowne-O.H.		
	Avg. Question #1 Score	1.50				3.33			2.25				3.33			2.67		
	Avg. Question #2 Score	1.50				1.67			1.75				2.67			2.00		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Question No.	Abbreviated Question																	
0	ODOT? (1=yes, 0=no)	1	1	0	0	1	1	0	1	1	1	0	1	1	0	1	1	0
1	Proj. was successful.	1	2	2	1	5	2	3	2	3	2	2	3	3	4	2	2	4
2	Partnering was successful.	1	1	3	1	2	2	1	2	3	1	1	2	2	4	1	2	3
3	Mngmnt showed support.	2	2	3	2	2	1	4	1	3	5	4	4	4	4	3	4	4
4	Mngmnt provided representative.	2	2	3	2	4	2	5	1	2	5	4	3	4	4	2	2	4
5	Mngmnt. monitored partnering.	2	2	3	2	2	1	3	2	2	4	4			4	2	2	3
6	Partners provided enough info.	1		2	3	2	4	1	3	2	2	2	2	2	3	2	2	4
7	Partners always helpful getting us info.	1	1	3	3	2	2	1	4	2	4	1	2	2	4	2	2	2
8	Partners kept us informed about changes.	2	1	3		2	2	1	4	3	4	1	2	1	3		3	2
9	Info sharing expected.	4	2	4	2	3	4	1	4	2	4	2	2	2	3	2	4	4
10	Our partner was highly trustworthy.	2	2	3	2	2	4	1	2		2	1	3	3	2	1	2	2
11	We wanted trusting relationship.	4	4	4	3	5	4	5	4	4	4	5	3	3	4	4	4	4
12	We believed trust was essential.	5	5	4	1	4	4	5	5	4	5	5	4	4	4	5	4	5
13	We trusted partners decisions were good	2	2	3	3	2	3	1	4	3	2	1	2	2	3	4	2	2
14	We felt we got a raw deal	4	2	3	2	2	5	5	4	3	4	4	4	4	3	4	5	4
15	Partnership was marked by harmony.	1	1	3	2	1	1	1	2	2	4	2	2	2	3	2	2	2
16	We believed our partners were committed.	2	1	3	2	2	2	1	2	3	4	1	2	3	4	2	1	2
17	We were committed to our promises	3	3	4	2	2	1	5	4	4	4	4	3	3	4	3	4	4
18	Partnering teams had commun. skills	2	3	3	4	4	4	3	3	4	5	2	3	2	4	4	4	3
19	Workshop contrib. To effort	2	3	2	3	3	1	3	3	3	4	2			4			2
20	Workshop facilitated commun.		2	4	3	4	2	3	4	4	5	2	4	4	4	4	4	4
21	Workshop yielded specifics		3	3	3	4	2	3	4	4	2	2			4	3	3	4
22	Workshop clarified rights & responsibilities		4	4	4	3	2	4	4	4	4	2			4	2	3	4
23	Conflict resolution tools used	3	4	3	2	3	2	2	2	3	1	2	3	3	4	2	4	1
24	Partner established good contact	3	2	3	2	2	4	1	2	3	4	2	3	2	4	2	1	2
25	We contacted partner for clarification	4	4	4	4	3	4	4	4	4	4	4	3	2	4	3	4	4
26	Activities w/ partners were coordinated	2	2	3	2	2	2	3	3	3	2	2	3	2	4	3	3	2
27	Focused on critical vs. trivial issues	4	4	3	4	4	2	1	4	4	1	2	4	1	4	2	4	1
28	We knew what to do to partner	4	2	4	2	4	3	4	4	2	4	4	4	4	4	3	4	4
29	We developed novel ideas	1	2	3	2	3	2	3	3	3	4	2	3	3	3	2	3	4
30	We met frequently to discuss partnering	2	4	3	2	4		2	2	2	1	2	2	4	4	2	2	4
31	Facilitator met w/ us regularly	1	1	1	2	4	1	2	5	2	1	2	2	2	2	2	1	2
32	We focused on value engineering	2	2	3	3	4	4	2	2	2	1	2	2	3	4	2	2	4
33	We used benchmarking	1	2	1	2	2	2	3	3	2	1	2	2	3	2	2	1	2
34	Partnering feedback mechanism was in place	3	2	1	2	3	1	2	2	3	1	2	3	3	4	3	4	4
35	Partner praised our performance	2	3	2	3	1	2	2	1	3	1	1	3	3	3	2	2	2
36	We fulfilled commitments/met partn. expect.	3	2	3	2	1	2	5	2	4	4	1	2	3	4	3	1	3
37	Our org. goals have no conflict w/ partn. goals.	5	3	4	2	2	2	4	3	4	4	5	4	5	2	2	1	4
38	Our org. goals are in line w/ partnering goals.	4	3	4	2	3	4	4	3	4	2	5	4	5	3	2	1	4
39	Given chance I would have quit partn. Agrmnt.	4	4	3	4	1	5	4	3	2	2	4			2	3	5	2
40	Qty. of formal/written comm. was high	5	5	5	4	2	4	5	5	4	5	2			4			2
41	Qty. of informal/verbal comm. was high	4	2	5	3	3	5	5	4	3	5	2			3			2

PARTNERING CASE STUDY SURVEY -- WINTER 2002

		More successful partnering efforts																		
		Crooked River Gorge Br.		6th/7th Street Couplet			Evans Cr.-Rock Pt.			Kruse Way		Stafford Interchange			West 11th Ave.-NCL		Davis Slough Bridge			
	Avg. Question #1 Score	5.00		5.00			4.67			4.50		4.33			4.00		3.75			
	Avg. Question #2 Score	4.00		4.33			4.33			4.50		4.00			3.50		3.75			
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Question No.	Abbreviated Question																			
0	ODOT? (1=yes, 0=no)	1	0	1	1	0	1	1	0	1	0	1	0	0	1	0	1	0	0	0
1	Proj. was successful.	5	3	5	5	5	5	4	5	5	4	5	4	4	4	4	4	4	4	3
2	Partnering was successful.	4	4	5	4	4	5	4	4	5	4	4	4	4	3	4	3	4	4	4
3	Mngmnt showed support.	4	4	5	5	4	4	2	4	5	5	2	4	3	3	2	5	4	4	3
4	Mngmnt provided representative.	3	4	5	3	4	4	3	5	5	4	4	4	4	2	3	4	2	3	4
5	Mngmnt. monitored partnering.	3	4	4	3	4	3	4	3	5	4	2	3	3	1	3	3	4	3	2
6	Partners provided enough info.	4	4	5	4	2	4	4	4	5	4	4	4	4	4	4	2	4	4	4
7	Partners always helpful getting us info.	4	5	5	3	4	4	3	4	4	4	4	4	3	4	2	2	2	4	4
8	Partners kept us informed about changes.	4	4	4	2	4	3	2	4	4	4	4	4	4	3	3	2	2	4	4
9	Info sharing expected.	4	4	5	4	4	3	4	4	5	4	5	4	4	4	2	4	2	4	4
10	Our partner was highly trustworthy.	5	4	5	3	4	3	3	3	4	4	4	4	4	4	4	3	4	3	4
11	We wanted trusting relationship.	5	4	5	4	5	5	4	5	5	5	5	4	4	5	4	4	4	4	4
12	We believed trust was essential.	5	4	5	4	4	5	4	5	5	5	5	4	4	5	4	4	4	4	4
13	We trusted partners decisions were good	3.5	3	5	3	4	3	2	2	4	4	3	4	3	3	2	2	4	4	4
14	We felt we got a raw deal	2	2	1	2	2	1	2	2	1	2	2	2	3	2	3	2	2	2	2
15	Partnership was marked by harmony.	3	4	4	2	3	3	3	3	5	4	4	4	3	3	2	2	2	3	3
16	We believed our partners were committed.	4	4	5	4	4	4	4	3	4	4	4	4	4	3	3	4	2	4	3
17	We were committed to our promises	4	4	4	4	4	4	3	5	4	5	4	4	4	3	2	4	4	4	4
18	Partnering teams had commun. Skills	4	4	4	2	4	4	4	3	4	4	4	4	4	4	2	3	2	4	3
19	Workshop contrib. To effort	2	3	2	2	5	2	2	3	2	5	2	3	3	3	1	3	4	3	3
20	Workshop facilitated commun.	3	3	4	4	5	4	4	3	4	5	4	4	3	4	3	4	4	4	3
21	Workshop yielded specifics	2	4	3	3	5	4	1	3	4	5	4	3	3	4	4	4	4	4	3
22	Workshop clarified rights & responsibilit.	3	4	4	3	4	3	2	4	4	5	3	4	4	4	4	4	4	4	3
23	Conflict resolution tools used	5	4	3	3	4	4	4	3	5	5	5	4	4	4	3	4	2	4	2
24	Partner established good contact	4	4	5	3	4	4	4	4	4	5	4	4	4	4	2	2	2	4	2
25	We contacted partner for clarification	4	4	5	4	4	4	4	4	5	4	5	4	4	4	2	4	4	4	4
26	Activities w/ partners were coordinated	4	4	5	4	4	4	4	3	5	4	4	4	3	4	2	2	2	4	4
27	Focused on critical vs. trivial issues	5	4	4	4	5	4	2	4	5	5	5	4	4	3	1	2	2	4	4
28	We knew what to do to partner	4	4	3	4	4	3	4	4	4	5	5	4	4	3	4	4	4	4	2
29	We developed novel ideas	3	3	4	3	4	4	2	4	3	4	3	3	3	2	1	4	2	3	2
30	We met frequently to discuss partnering	5	4	5	4	3	2	4	4	4	4	2	2	4	2	1	1	2	3	2
31	Facilitator met w/ us regularly	2	2	2	1	3	1	2	2	4	4	1	1	2	1	1	1	2	1	2
32	We focused on value engineering	4	4	4	3	5	2	4	4	2	3	3	3	3	2	2	1	2	2	3
33	We used benchmarking	2	3	1	1	3	1	3	3	2	4	2	2	2	2	1	1	2	2	2
34	Partnering feedback mechanism in place	2	3	3	3	3	4	4	4	4	4	4	1	2	2	1	2	2	2	2
35	Partner praised our performance	3.5	3	5	3	4	5	2	4	4	5	4	2	3	3	1	3	4	2	4
36	We fulfilled commitments/ partn. expect.	4	4	5	3	4	5	2	5	4	5	4	4	4	3	2	3	4	4	3
37	Our org. goals not conflict w/ partn. goals.	4	4	3	3	2	2	2	4	5	5	5	4	4	4	1	5	2	4	3
38	Our org. goals in line w/ partnering goals.	4	4	3	3	2	3	3	4	5	5	5	4	4	4	1	5	4	4	3
39	Given chance would quit partn. Agrmnt.	1	2	1	3	2	1	2	4	1	2	1	2	1	1	2	1	2	2	2
40	Qty. of formal/written comm. was high	4	2	3	2	2	2	4	4	2	4	2	4	3	4	3	3	2	2	4
41	Qty. of informal/verbal comm. was high	4	4	5	4	4	4	4	4	4	4	4	3	4	4	2	3	4	2	4

APPENDIX C

Case Study Interview Script

INTERVIEW SCRIPT

Project Title: _____ Date: _____

Attendees: _____
_____
_____

1. **Good morning/afternoon.**
2. **Introductions.**
3. **Purpose of meeting:**
   "ODOT has made a commitment to improve the effectiveness of partnering. **'The Partnering Work Group,'** which is a subcommittee of the **'Oregon Partnership for Highway Quality,'** has asked us to interview ODOT Project Managers and their contractor counterparts on 12 recently completed partnered projects. We're here to learn as much as possible about partnering based on your experience with the project(s) from this list, in which you were involved."

Request project narrative.

4. **Respondent completes survey form.**
   "Before we start the interview, I'd like for you to complete this short survey form as a way of getting you mentally back into the project and the partnering process associated with it."

   If narrative has just been received, interviewer reviews as much of it as possible while respondent completes survey.

5. **Review confidentiality policy for interview:**

"If for whatever reason, you have information that you would like to provide that you would not like to have associated with your name, please make this clear so that we may treat the information accordingly."

6. Structured Interview questions:

a. How do you know if a PROJECT is successful or not? What constitutes a successful project and what constitutes an unsuccessful project?

b. How do you know if PARTNERING is successful or not? What constitutes successful partnering and what constitutes unsuccessful partnering?

c. Does the success of PARTNERING (or lack thereof), affect your evaluation of the success of the PROJECT or does the success of the PROJECT affect your evaluation of the PARTNERING? Please explain.

d. Please list/discuss factors that lead to successful PARTNERING.

e. Please list/discuss factors that lead to unsuccessful PARTNERING.

f. What did you think about the partnering workshop for this project? Was any written product generated in this/these workshop(s)?

g. Did you rate this PROJECT as successful? Why/Why not?

h. Why do you think that this PROJECT turned out this way?

i. Did you rate PARTNERING on this project as successful? Why/Why not?

j. Why do you think that PARTNERING on this project turned out this way?

7. Open Ended Project Review Questions:

a. What were the biggest obstacles to successful PARTNERING on this project?

b. Did you notice any time in the project when partnering really "took off" or really deteriorated? Please explain.

c. Have you been involved with both successful and unsuccessful partnering efforts? If so, how was this one different?

d. What impact did the quality of the project engineering, planning, and/or constructability have on the partnering effort?

e. What effect did unexpected technical issues have on the partnering effort?

f. What impact did contractor capability to perform, have on the project partnering?

g. Did you have any claims on this project? If yes, do you think they could have been avoided if some aspect of partnering was done better? If yes, please describe how partnering could have been used.

h. What lessons about forming and/or maintaining project partnering, did you learn from this project?

i. If one partner doesn't want to partner, what should be done about it?

j. If you could start the project over again, what would you do differently, or want to see be done differently to improve the effectiveness of PARTNERING?

k. In this question we're attempting to think outside the box." Either within the existing constraints of public project contracting, or through some practical adjustment to those constraints, could some form of partnering incentive system improve partnering performance (i.e., preference points toward future projects or bid qualifications, $ bonus for partnering performance, ODOT bonus at review time, based on partnering performance, etc.)?

l. Other questions generated by previous discussion.

8. FOR ODOT INTERVIEW - Identify contractor contact to interview:

Who do you think would be our best choice to interview from the contractor's organization?

9. Conclude interview:
"Thank you for your time. Here's a card with contact information for me. If you think of any other relevant information, please contact me."

Request project narrative ***be sent, if it has not yet been received.***