**FIELD BENCHMARKING PROCEDURE**

**Quality Assurance Procedure**

Scope: This procedure applies to all construction projects except as determined by the Vice President of Operations.

Purpose: The purpose of this procedure is to provide a systematic and timely method for planning, monitoring, documenting, and controlling work in the field. Field benchmarking will result in greater employee involvement, more efficient construction operations, increased customer satisfaction, and sustained competitive advantage. More efficient construction operations result from increased job-site safety; improved construction quality and reduced rework; and increased construction productivity through preplanning, continuous improvement, and process reengineering.

Personnel and Responsibilities: This section identifies key personnel and describes their role and responsibilities as related to field benchmarking.

**Vice President of Operations** is responsible for:

1. Ensuring that benchmarking is performed on all construction projects in accordance with the scope section of this procedure.

2. Ensuring that all division personnel are trained in benchmarking.

3. Ensuring that there are sufficient data processing resources to support field-benchmarking activities.

4. Working to improve the effectiveness and efficiency of the field benchmarking procedure.

**Project Manager** is responsible for:

1. Preparing and submitting Project Benchmarking Plan to the Accounting Department prior to the start of construction. The Project Benchmarking Plan must be in compliance with this procedure.

2. Setting project-specific benchmarking requirements for each project and communicating those requirements to the Foreperson.

3. Implementing the Project Benchmarking Plan at the project site.

4. Working with the Project Foreperson to ensure that all Construction Team members at the project site understand and are trained in benchmarking procedures.

5. Ensuring that benchmarking data from the project is received, processed, and distributed

in accordance with the procedure and the Project Benchmarking Plan for the project.

6. Working with the Project Foreperson to ensure that reported benchmarking data is accurate and communicated to the Construction Team.

7. Ensuring that the benchmarking information is used for construction process improvements that will lead to greater safety, quality, and productivity at the project site.

8. Working to improve the efficiency and effectiveness of the field benchmarking procedure.

**Project Foreperson** is responsible for:

1. Working with the Project Manager to implement benchmarking on the project in accordance with this procedure and the Project Benchmarking Plan.

2. Identifying the benchmarking training requirements of individual Construction Team members and notifying the Project Manager of those requirements.

3. Working with the Project Manager and the Construction Team to set rational and achievable benchmarks for those activities to be benchmarked based on actual field conditions.

4. Ensuring that Construction Team members gather the required production data accurately and turn in production data on a daily basis for analysis.

5. Ensuring that the production data gathered is used for construction process improvement only.

6. Sharing the production information with the Construction Team in a timely manner so that construction process improvements can be made as needed.

7. Conducting preplanning and brainstorming sessions with the Construction Team to improve construction process safety, quality, and productivity.

8. Working to improve the efficiency and effectiveness of the field benchmarking procedure.

**Construction Team** members are responsible for:

1. Working with the Project Foreperson to implement benchmarking on the project in accordance with this procedure and the Project Benchmarking Plan.

2. Actively taking part in benchmarking training.

3. Actively participating in setting benchmarks.

4. Actively participating in brainstorming and preplanning sessions for process improvement.

5. Executing the work in accordance with the Activity Preplan.

6. Gathering accurate personal production data on a daily basis and submitting it to the Project Foreperson for aggregation and analysis.

7. Assisting the Project Foreperson by reporting possible problems, anticipated material and equipment shortages, needed or broken production equipment, and providing suggestions for construction process improvement.

8. Working to improve the efficiency and effectiveness of the field benchmarking procedure.

**Data Processing Specialist** is responsible for:

1. Receiving benchmarking data from the field in accordance with this procedure and the Project Benchmarking Plan.

2. Entering benchmarking data, processing benchmarking data, and outputting benchmarking information in accordance with this procedure and the Project Benchmarking Plan.

3. Distributing benchmarking information in accordance with this procedure and the Project Benchmarking Plan.

4. Alerting the Vice President of Operations when it is anticipated that there will be insufficient resources available to meet the data processing demands of the field.

5. Working to improve the efficiency and effectiveness of the field benchmarking procedure.

Reference Documents: The documents shown on Table 2.1 are referenced in this procedure.

Definitions: All terms used in this procedure are intended to be defined in accordance with normal industry usage unless otherwise noted in this section. Terms defined in this section are unique to this procedure and the definitions provided or referenced apply. Benchmarking terms are defined in the document: Benchmarking Field Operations.

Step-by-Step Requirements: This section provides the detailed step-by-step requirements for implementing field benchmarking. Responsibility for performing each step should be defined by the approved Project Benchmarking Plan unless responsibility is specifically assigned in this section.

**1.0 Develop Project Benchmarking Plan**

1.1 Review contract documents.

1.2 Review bid estimate work breakdown and labor hours.

1.3 Identify activities to be benchmarked. Those activities that are identified as being critical to project success or high risk, are repetitive and contain a significant number of labor hours, and/or are found to be a potential problem are to be benchmarked. Change order work should be benchmarked separately from base contract work. Specific instruction on how to identify activities to be benchmarked can be found in Construction Productivity, Chapter 2: Benchmarking Field Operations.

1.4 Determine benchmarking data gathering and processing requirements.

1.5 Determine benchmarking report frequency and format requirements.

1.6 Assign benchmarking data gathering, processing, and reporting responsibilities.

1.7 Prepare a written Project Benchmarking Plan which addresses items 1.1 through 1.7 as well as any other items that are important to ensure a successful benchmarking effort. The Project Benchmarking Plan must be prepared in accordance with this procedure.

1.8 Project manager submits the Project Benchmarking Plan to the Accounting Department.

1.9 Implement the Project Benchmarking Plan.

**2.0 Provide Benchmarking Training**

2.1 Identify training required to successfully implement the Project Benchmarking Plan.

2.2 Develop a benchmarking training plan and schedule.

2.3 Provide needed benchmarking training.

**3.0 Define the Work**

3.1 Define the scope of work to be benchmarked which includes a description of the work activity and all work involved in accomplishing that work activity. Specific instructions on how to define the scope of work to be benchmarked are provided in the document: Benchmarking Field Operations. 3.2 Assign a labor code to the work activity in accordance with the Labor Activity Code Index. Modify standard description as required to match project requirements. Assign any additional labor codes required in accordance with the company procedure.

3.3 Document activity labor code and scope of work to be benchmarked.

3.4 Provide work activity information to the Project Foreperson and Data Processing Specialist.

**4.0 Set the Benchmark**

4.1 Prior to starting work on a work activity identified for benchmarking, meet with the Construction Team that will perform the work to set the benchmark production rate in labor hours per unit. The benchmark production rate unit shall be the same as that used to prepare the bid estimate in order to facilitate comparison and cross-reference.

4.2 Share activity scope of work, bid estimate labor hours, and other relevant information with the Construction Team that will perform the work.

4.3 Consider bid estimate labor hours, work unit quantity, current and anticipated site conditions, available means and methods, and other relevant information in setting the activity benchmark.

4.4 Set the benchmark productivity rate for the work activity.

**5.0 Preplan the Work**

5.1 After setting the benchmark for an activity and before starting work on the activity, prepare and Activity Preplan.

5.2 Meet with the Construction Team that will perform the work to determine the means and methods for performing the work that will achieve the benchmark. Use the Activity Preplanning Form as a guide for planning the execution of the work.

5.3 Brainstorm work process improvement methods for improving safety, quality, and productivity with the Construction Team and incorporate them into the Activity Plan.

**6.0 Implement the Preplan**

6.1 Ensure that the needed information, materials and installed equipment, tools and production equipment, and space are available in sufficient quantities when needed by the Construction Team.

6.2 Commence work in accordance with the Activity Preplan and project schedule.

**7.0 Gather Production Data**

7.1 Gather daily activity production data from each Construction Team member. In

addition, gather Construction Team comments with regard to what work was performed during that day, problems and delays encountered, and suggested process improvements. If no work was performed on the work activity on a given day, that should be noted also along with the reason that no work was performed.

7.2 Sum the daily activity production data from each Construction Team member to get the total daily production data for the work activity.

7.3 Record the total daily Construction Team production data for the activity on the Daily Benchmarking Activity Report form. The Daily Benchmarking Activity Report form may be either the standard paper form or an electronic spreadsheet version that provides the same information in the same format.

7.4 Record Construction Team comments with regard to what work was performed during the day, problems and delays encountered, and suggested process improvements in the Foreperson's Daily Project Log and/or on the Daily Benchmarking Activity Report.

**8.0 Chart Activity Status and Productivity**

8.1 Process production data in accordance with this procedure and the Project Benchmarking Plan.

8.2 Prepare a benchmarking summary spreadsheet that includes the following work activity information and data columns:

8.2.1 Work Activity Information:

(a) Activity Description

(b) Activity Labor Code

(c) Activity Scope

(d) Estimated Production Rate

(e) Benchmark Production Rate

8.2.2 Work Activity Data Columns:

(a) Date

(b) Effort:

(1) Daily (Or Weekly) Labor Hours Expended

(2) Total Labor Hours Expended to Date

(c) Installed Quantity:

(1) Daily (Or Weekly) Units Installed

(2) Total Units Installed to Date

(d) Unit Productivity:

(1) Daily (Or Weekly) Labor Hours per Unit

(2) Average Labor Hours per Unit to Date

8.2.3 Detailed instructions for setting up a benchmarking summary sheet and the associated column calculations are provided in the document: Benchmarking Field Operations.

8.3 Provide a benchmarking summary run chart that plots daily labor hours per unit and average labor hours per unit taken from the benchmarking summary spreadsheet against time in days or weeks. Detailed instructions for setting up a benchmarking summary run chart are provided in the document: Benchmarking Field Operations.

8.4 Distribute the benchmarking summary spreadsheet and run chart in accordance with the Project Benchmarking Plan.

**9.0 Evaluate Activity Status and Productivity**

9.1 Evaluate the effectiveness of the Activity Preplan by comparing the average labor units to date against the benchmark productivity rate. Consider trends, type of work performed to date, problems and delays encountered, and suggested process improvements.

9.2 Post and/or distribute benchmarking summary spreadsheet and run chart for Construction Team review.

9.3 Meet with Construction Team in accordance with the Project Benchmarking Plan and analyze activity progress, productivity, problems and delays encountered, and suggested process improvements.

9.4 Revise Activity Preplan as required to improve safety, quality, and productivity based on actual field conditions encountered.

**10.0 Implement Revised Activity Preplan**

**11.0 Audit Activity Benchmarking Data**

11.1 Audit activity-benchmarking data on a periodic basis as required by the Project Benchmarking Plan to ensure accurate data.

11.1.1 Compare total labor hours expended to date against job cost report labor hours.

11.1.2 Compare total units installed to date against actual material delivered lass job-site inventory.

11.2 Correct and document any errors identified.

11.3 Issue a revised benchmarking summary spreadsheet and run chart if needed.

**12.0 Document and Share Benchmarking Results**

12.1 Integrate activity-benchmarking data into the company planning and estimating database.

12.2 Share innovations and construction process improvements throughout the company through in-house meetings and newsletter.