



Staff Efficiency Report Users Guide

The Staff Efficiency Report is a management report that contains information on how efficiently field employees are utilized on projects where contract payments are made through the Construction Accounting System (CAS). Totals are calculated for each Bridge Construction Engineer and Area Construction Manager.

The Staff Efficiency Report has been available since January 1998.

The Staff Efficiency Report is available to Area Construction Managers and Bridge Construction Engineers on the OSC Seniors and Managers Intranet website on a monthly basis. You will be required to furnish a User ID and password to access the Staff Efficiency Report. Area Construction Managers are responsible for reviewing the data contained in the Staff Efficiency Report and for making adjustments in project staffing as they see fit.

The Staff Efficiency Report contains information on the cumulative staff efficiency by Bridge Construction Engineer and Area Construction Manager. Staff efficiency values for individual projects appear on the Construction Schedule. Staff efficiencies are calculated only for projects that are in the PISA system.

What is staff efficiency and how is it calculated? Before this can be answered, other terms must be defined. The first is Hourly Engineering Production, or HEP. HEP is defined as the structure dollars paid to the Contractor for a project divided by the number of hours charged to the project by Office of Structure Construction employees and is expressed in dollars per hour.

HEP_{goal} is defined as the Structure cost estimate divided by the estimated resources (in hours) required for the Office of Structure Construction to staff the project. For example, if the Structure cost estimate for a project is \$4,000,000 and the calculated resource requirement to staff the project is 6,500 hours, then the HEP rate would be \$4,000,000 divided by 6,500 hours, or 615.38 dollars per hour. HEP_{goal} is always calculated prior to project advertisement and is used as the baseline for determining the staff efficiency for the project.

HEP_{actual} is defined in a similar manner as HEP_{goal} . However, HEP_{actual} uses the actual contract payments for structure work and actual employee charges. For example, if the contractor performed \$500,000 of contract work to date, and the amount of OSC employee time charged to inspect this work was 1,000 hours to date, then the HEP rate would be \$500,000 divided by 1,000 hours, or 500 dollars per hour. HEP_{actual} can be calculated at any time during the life of a project after a monthly progress payment to the contractor has been authorized. HEP_{actual} is only as valid as the structure data entered into PISA and the OSC employee time charges entered into TRS.

To determine how closely the actual project charges and costs compare to the anticipated project charges and costs, simply compare HEP_{goal} and HEP_{actual} . Staff efficiency is defined

as the value of HEP_{actual} divided by HEP_{goal} , and is expressed as a percentage. Using the examples from the two preceding paragraphs, the staff efficiency for the project would be 500 dollars per hour divided by 615.38 dollars per hour, or 81%.

The value calculated for staff efficiency can be used as a performance indicator, indicating how efficiently OSC employees are being used on a project, by a Bridge Construction Engineer, by an Area Construction Manager, or by the Office of Structure Construction as a whole. Currently, the Staff Efficiency Report is used as a performance measure for the Office of Structure Construction.

What staff efficiency value should you attempt to achieve on your projects or in your area? In the ideal world, a staff efficiency value of 100% would be just right for all projects and all areas. This would mean that OSC employees are being used exactly as anticipated, without overrunning the available resources. In the real world, the staff efficiency value for your projects or areas should be between 85% and 115%. A staff efficiency value of less than 85% generally means there are too many OSC employees on the project or in the area and that these employees are being under-utilized. A staff efficiency value of more than 115% generally means there are not enough OSC employees on the project or in the area and that these employees on the project or in the area are being “run ragged”.

Naturally, there are exceptions to these generalizations. A project that has lots of problems with the plans and specifications will generally have a low staff efficiency value, sometimes 50% or less due to the “extra attention” required of OSC employees. Other factors that may influence the staff efficiency value include the following:

- Projects with inexperienced State staff will generally have a lower staff efficiency value. These employees require additional on-the-job training and it takes them a longer period of time to perform their work than the “average” employee would take.
- Projects with highly experienced State staff will generally have a higher staff efficiency value. These employees are generally very efficient and “can do the work of two or three employees”.
- Projects with inexperienced contractors will generally have a lower staff efficiency value. In these cases, State staff may spend a lot of time guiding the contractor through the process, in addition to handling their own administrative engineering responsibilities.
- Projects with highly experienced contractors will generally have a higher staff efficiency value. These contractors usually require less attention since they usually know what the specifications and plans require.
- Projects with a high turnover of OSC employees will generally have a lower staff efficiency value. This is because it takes each new employee some time to “get up to speed” when they arrive on a going project.
- Projects with new construction techniques or new specifications will generally have a lower staff efficiency value. This is because OSC employees have to spend more time learning how to administer the new construction techniques or new specifications. Examples of new construction techniques and specifications include alternative piling, DRB specifications, and SWPPP specifications, among others.
- Projects with a large amount of regulatory agency input will generally have a lower staff efficiency value. This is because it takes more OSC employee time to administer the requirements of these agencies. In addition, regulatory agency requirements generally mean construction windows and complex construction staging, which affects the “flow” of the project.

When projects begin, there are usually a lot of OSC employee charges to the project for reviewing submittals, shop plans, etc. before any contract payments have been made. This could result in a staff efficiency value of 0% for the project, which will drag down the staff efficiency value for the responsible unit and area. The staff efficiency calculation recognizes this situation

and artificially adjusts HEP_{goal} by multiplying it by an adjustment factor. Adjustment factors are made based on two scenarios; one for projects with a Structure cost estimate of less than \$40,000 in 1967 dollars, and one for projects with a Structure cost estimate of more than \$40,000 in 1967 dollars. Conversions from today's dollars are made by dividing the contractor's bid price by the Bridge Cost Index at the time bids were opened. The adjustment factors are also based upon how much of the work is complete, as measured by contract payments to date. Adjustment factors for projects with a Structure Cost estimate of less than \$40,000 in 1967 dollars are calculated as shown on Attachment No. 1. Adjustment factors for projects with a Structure Cost estimate of more than \$40,000 in 1967 dollars are calculated as shown on Attachment No. 2.

Think of this report as a tool to help you decide how to staff projects and areas. You know best how each project or projects in an area are going. If the staff efficiency value for a project is slipping or has gotten too high without good reason, then this report will help you to know when it is time to adjust the staff level of the project.

The Staff Efficiency Report consists of a single report that is produced for all construction areas. The letters shown in the following correspond to the data fields shown on the sample Staff Efficiency Report shown in Attachment No. 3.

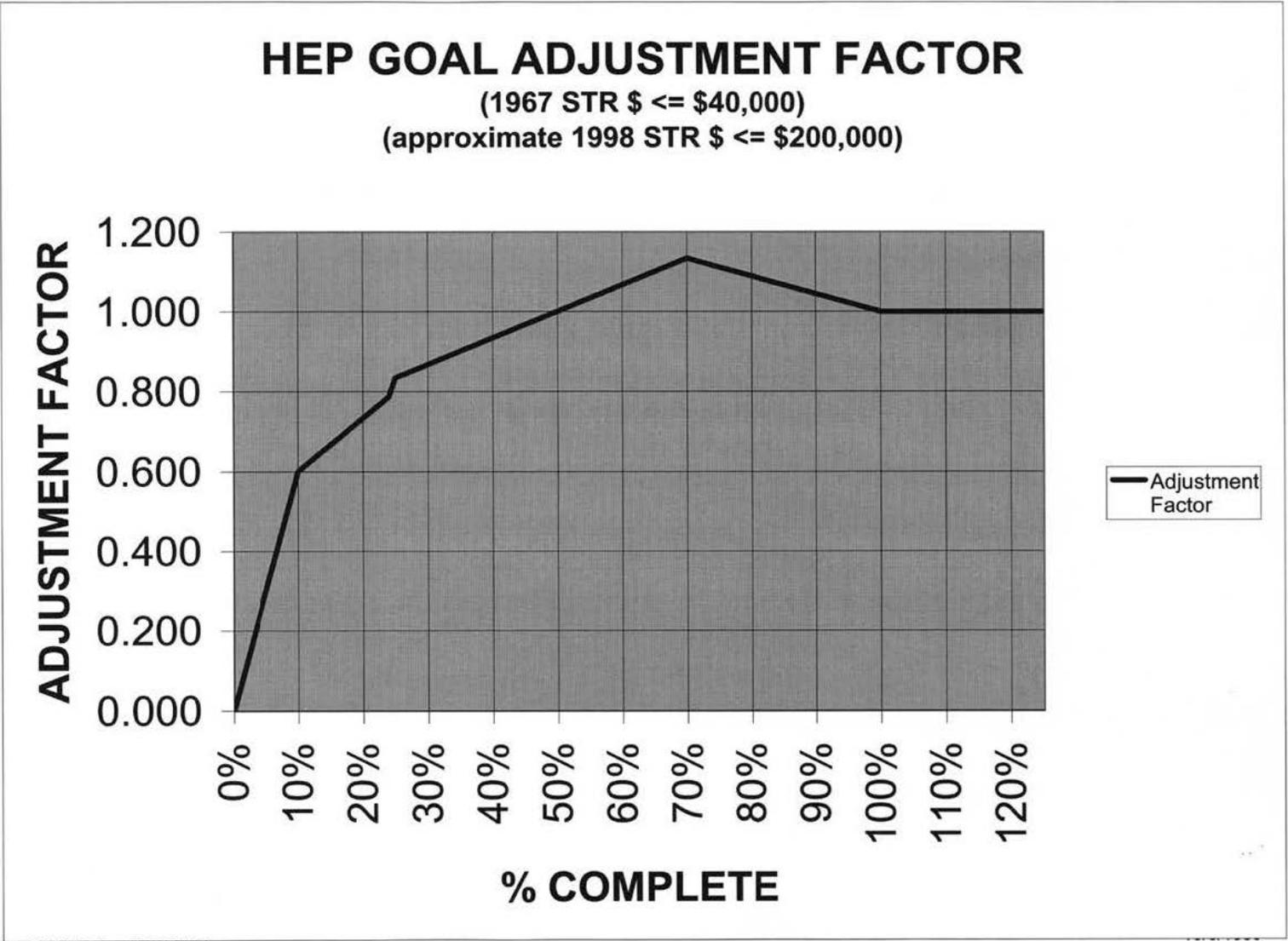
- A. **Report Header.** This contains the date of the report. All data used to calculate the values shown on the Staff Efficiency Report is through the date shown in the Report Header.
- B. **Branch:** This section header shows the Construction Branch and the responsible Area Construction Manager for the Bridge Construction Engineers listed.
- C. **Unit:** This data field header contains a list of the Responsible Units for the construction office.
- D. **Senior:** This data field header contains a list of the responsible Bridge Construction Engineers for the area.
- E. **Efficiency – Going Projects:** This data field header contains a list of the calculated staff efficiency values for each Bridge Construction Engineer. The staff efficiency value is calculated as the sum total of HEP_{actual} divided by the sum total of HEP_{goal} for all projects assigned to the Bridge Construction Engineer that are going as of the date of the report.
- F. **Efficiency – Going Projects and Projects Completed Within the Last Twelve Months:** This data field header contains a list of the calculated staff efficiency values for each Bridge Construction Engineer. The staff efficiency value is calculated as the sum total of HEP_{actual} divided by the sum total of HEP_{goal} for all projects assigned to the Bridge Construction Engineer that are going as of the date of the report or have been accepted within the last twelve months of the date of the report.
- G. **Branch x Totals:** This section footer contains the calculated staff efficiency for the construction branch. The staff efficiency value is calculated as the sum total of HEP_{actual} divided by the sum total of HEP_{goal} for all projects assigned to the Area Construction Manager.
- H. **OSC Totals:** This report footer contains the calculated staff efficiency for the Office of Structure Construction. The staff efficiency value is calculated as the sum total of

HEP_{actual} divided by the sum total of HEP_{goal} for all projects assigned to the Office of Structure Construction.

HEP GOAL ADJUSTMENT FACTOR

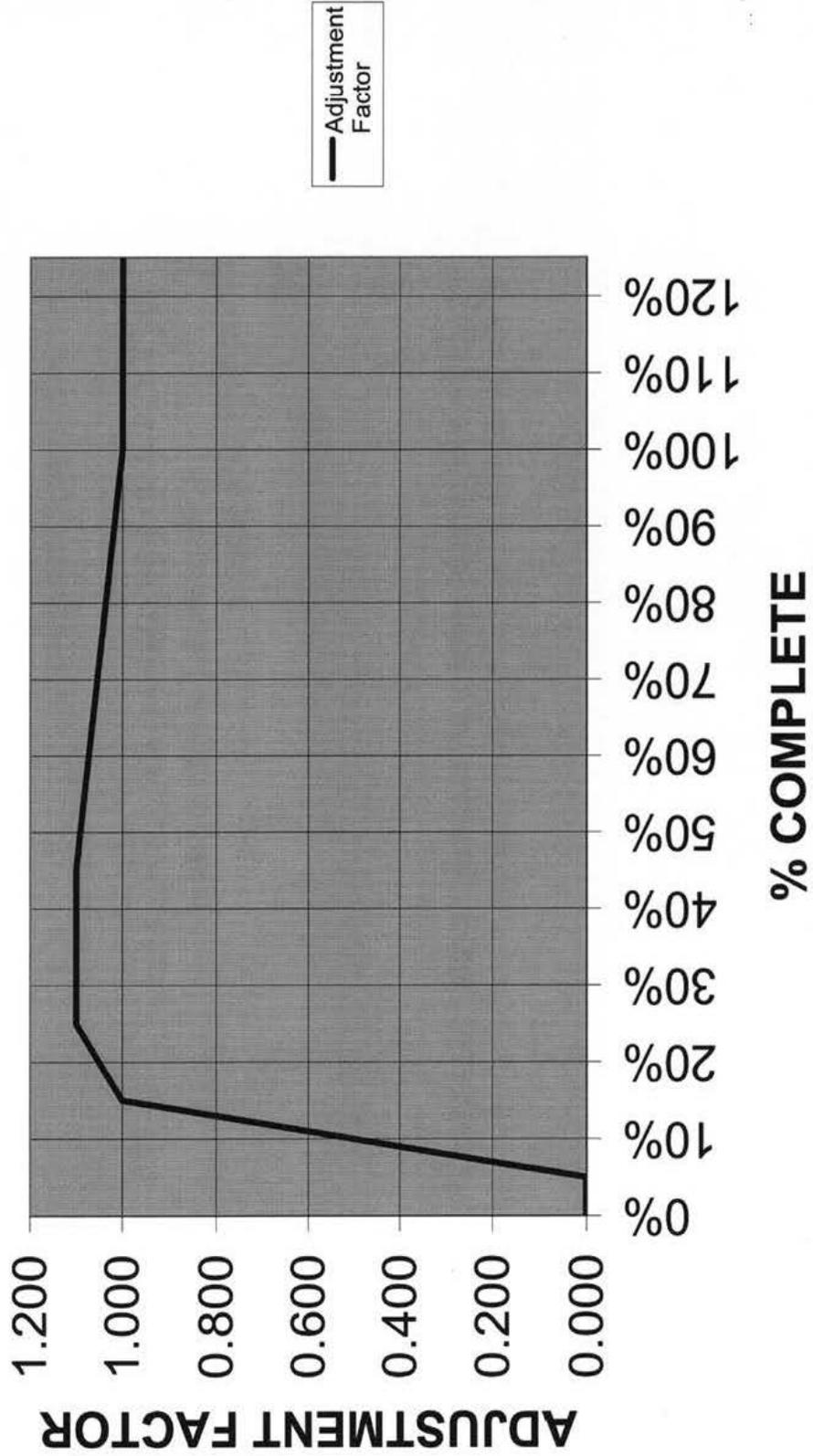
(1967 STR \$ <= \$40,000)

(approximate 1998 STR \$ <= \$200,000)



HEP GOAL ADJUSTMENT FACTOR

(1967 STR \$ > \$40,000)
(Approximate 1998 STR \$ > \$200,000)



A STAFF EFFICIENCY REPORT - OFFICE OF STRUCTURE CONSTRUCTION

Mar 2001

B BRANCH: A THOMAS,D. **F** EFFICIENCY - GOING PROJECTS AND PROJECTS COMPLETED WITHIN THE LAST TWELVE MONTHS

C UNIT	D SENIOR	E EFFICIENCY - GOING PROJECTS		EFFICIENCY - GOING PROJECTS AND PROJECTS COMPLETED WITHIN THE LAST TWELVE MONTHS	
502	THOMPSON,R.	137%	(12 projects)	124%	(16 projects)
503	FEREIRA,N.	55%	(10 projects)	52%	(19 projects)
504	NELSEN,B.	54%	(14 projects)	56%	(19 projects)
505	KEIM,D.	50%	(3 projects)	50%	(3 projects)
G BRANCH A TOTALS:		61%	(39 projects)	59%	(57 projects)

BRANCH: B WILDER,D.

UNIT	SENIOR	EFFICIENCY - GOING PROJECTS		EFFICIENCY - GOING PROJECTS AND PROJECTS COMPLETED WITHIN THE LAST TWELVE MONTHS	
592	PLAAS,G.	62%	(4 projects)	96%	(8 projects)
595	STULTZ,H.	11%	(3 projects)	11%	(3 projects)
597	NICKERSON,N.	59%	(4 projects)	59%	(4 projects)
598	MORGAN,W.	122%	(5 projects)	117%	(6 projects)
599	YEE,S.	75%	(10 projects)	75%	(11 projects)
BRANCH B TOTALS:		76%	(26 projects)	74%	(32 projects)

BRANCH: C BROWN,M.

UNIT	SENIOR	EFFICIENCY - GOING PROJECTS		EFFICIENCY - GOING PROJECTS AND PROJECTS COMPLETED WITHIN THE LAST TWELVE MONTHS	
562	KENNEDY,S.	145%	(13 projects)	93%	(18 projects)
572	BROWN,T.	92%	(6 projects)	83%	(7 projects)
573	JOHNSON,W.	78%	(8 projects)	90%	(9 projects)
574	PONZI,A.	125%	(14 projects)	105%	(19 projects)
BRANCH C TOTALS:		121%	(41 projects)	97%	(53 projects)

EFFICIENCY VALUES SHOULD BE BETWEEN 85% AND 115%

Tuesday, April 17, 2001

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A STAFF EFFICIENCY REPORT - OFFICE OF STRUCTURE CONSTRUCTION

Mar 2001

II OSC TOTALS:

E EFFICIENCY - GOING PROJECTS	F EFFICIENCY - GOING PROJECTS AND PROJECTS COMPLETED WITHIN THE LAST TWELVE MONTHS
92% (243 projects)	93% (308 projects)

EFFICIENCY VALUES SHOULD BE BETWEEN 85% AND 115%

Tuesday, April 17, 2001

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