CHAPTER 7
FORECASTING OF CONSTRUCTION PLACEMENT

7-1. **GENERAL.**

a. Forecasting of construction placement is a critical and highly subjective aspect of construction fiscal management. Forecasting is a joint effort that involves Programs and Project Management, Engineering Division, Construction Division and field offices. Accurate forecasting of placement and monitoring of actual placement throughout the budget year are critical parts of the preparation and management of an operating budget. Construction placement is the accrued value of work performed, and is recorded in the Corps accounting system. It is the responsibility of the Chief of Construction and his construction managers to ensure that the correct cost codes and accounting deadlines are met to record accurate placement values in the accounting system.

b. Forecasting placement is both art and science; therefore, a rigid standardized procedure is not imposed Corps-wide. However, the use of the AMPRS Work Placement Estimate Report in EP 415–345-3 (Standard Report 114-P5-046) is encouraged. A general methodology is provided which can be adjusted for local conditions, and is applicable Corps-wide. This chapter discusses such a methodology and the factors which should be considered when forecasting construction placement. Performance indicators and reporting requirements are also addressed. Major Subordinate Commands (MSC) and districts should, as far as is consistent with good business judgement, standardize procedures within their organizations and publish written guidance. Accurate forecasting of placement is dependent upon each functional element providing the required information on estimated contract amounts and scheduled award dates to the Construction Division in a timely manner.

7-2. **Steps for Placement Forecasting.** Placement forecasting should generally follow these steps:

a. Based on information furnished by Programs and Project Management, and Engineering Division, Construction Division shall prepare a preliminary schedule which includes all contracts which are expected to earn income on placement during the budget period. The list should include contracts which are "in design" (i.e., new starts) and those which are under construction (i.e., carry over).

b. The preliminary schedule prepared by Construction Division should be transmitted to the various subordinate offices (field offices) which will manage the construction. Each field office should modify the preliminary schedule to reflect

applicable field conditions and prepare an estimate of placement for the work they will manage. The modified schedule and placement estimates should then be returned to the Construction Division.

c. Construction Division shall then prepare an organization-wide placement forecast by compiling placement forecasts for all field offices. Field offices should have an opportunity to comment on any changes that are made to their placement forecasts.

d. After contract award, projections should be adjusted to reflect the contractor's progress schedule.

7-3. **Estimation of Placement.** The placement forecast for each contract should be estimated individually, considering all known factors which may impact placement. A conservative approach should be taken when estimating placement, since the preponderance unknown factors affecting construction will reduce rather than increase placement. The following factors should be considered when estimating placement:

a. Survivability rate.

(1) The probability of a project actually being constructed varies with the stage the project is in at the time the forecast is prepared. Contracts which are in the early stages of planning generally have a lower probability of being constructed, while those which have been funded have a higher probability. Historical experience should be used to evaluate this factor. The programs management office at HQUSACE and the customer should be consulted to help determine survivability.

(2) The survivability rate is normally accounted for by utilizing a reduced estimate of contract amount for the basis of the placement forecast. Factors from 100 to 20 percent of the Current Working Estimate (CWE) or Programmed Amount (PA) are typically used. The lower percentages are generally utilized to forecast placement for other than the current execution year.

b. Contract amount. The estimate of the value of construction to be performed generally becomes more accurate as the contract nears commencement of construction. The amount for awarded contracts is established; however, claims and modifications can impact these amounts. Factors should be applied to the CWE or PA to obtain a contract amount to utilize for forecasting placement. Typical values are 50 to 75 percent of the CWE/PA for unawarded contracts, and the contract amount plus contingencies for awarded contracts. The lesser of the CWE or PA should be used.

c. Construction duration. The period over which construction earnings will be accrued is almost always longer than is estimated at any particular stage in the life cycle of a project. Historical time growth trends should be determined, and adjustments made accordingly, to the scheduled construction duration. Placement is then distributed over the duration utilizing the sine-squared, linear, or Hannum earnings curves. For ongoing contracts which have a history of earnings, the adjustments to the construction duration should be based on actual performance. Typical duration adjustments for unawarded contracts are 40 percent increase for contracts with durations less than one year, 30 percent increase for contracts with durations of one to two years and 20 percent increase for contracts with durations over two years.

d. Construction start date. The date on which actual construction started, or will start, can have a significant impact on anticipated placement. Two major factors, the season of the year and the budget cycle, should be considered when evaluating the date work starts. Extreme seasonal weather conditions will generally reduce placement. Often award dates are slipped so that the anticipated "start work" date is shifted into another season, which may result in reduced earnings. Holidays such as Christmas and New Year also reduce placement. The time within the budget cycle that a contract is scheduled to begin earning placement is critical, since those scheduled for the beginning of the cycle have a higher probability of producing earnings within the Fiscal Year (FY) than those scheduled to begin work in the fourth quarter. Contracts scheduled for award in the fourth quarter may be delayed until the next FY.

e. Contract clauses. Clauses requiring large payments for items such as mobilization, off-site fabrication, site preparation and large equipment costs may distort normal earnings' curves.

f. Bottom line adjustment. The uncertainties associated with forecasting placement for a particular contract are many,and the actual placement can and often does vary widely from that forecast. These wide variations tend to balance out when the individual contracts from the various programs are combined into the district-wide placement forecast. This forecast should be evaluated in light of previous experience in the district. If experience indicates that the methods used produce high or low results which can not be traced to a single factor, an adjustment should be made to the final result.

7-4. **Update of Placement Schedules.** Actual placement is to be compared monthly to forecast placement and necessary steps taken to maintain or revise the budget. Schedules are to updated at least once per quarter and provided to the MSCs. Original and mid-year placement schedules by district by program are required by HQUSACE (CEMP-CM and CECW-OC). Experience demonstrates that slippages are often not recovered, so immediate cost-cutting actions are normally required whenever a slippage occurs.

7-5. **AMPRS & PROMIS Reporting.**

a. As a minimum, all projects expected to be awarded for construction in the upcoming FY shall be entered into AMPRS by 1 August (2 months prior to the start of the FY), with a CWE (data item 0850), Current Contract Award Date (0340) and Construction Calendar Days Original (0430) input in accordance with the above guidelines. A report is available via telephone access that displays construction work placement for the current and next fiscal years.

b. The fielding of PROMIS starts in FY 94. As districts convert from the use of AMPRS to PROMIS, use the appropriate reports and guidance provided by ER 5-7-1 (FR) and supplemental information to be issued during PROMIS implementation.

7-6. **Performance Indicators.** HQUSACE will, on a quarterly basis, report by MSC a comparison of forecast and actual placement for each program at the Command Management Review Conference.

7-7. **Statistical Analysis.** It may be useful to apply statistical methods to analyze forecast versus actual placement, contract duration, S&A costs/earnings, S&A man-years, etc., to help detect common and special causes of variation. This can be done in various ways, e.g., comparison of similar types of work versus time to accomplish, size of contract versus time to accomplish, comparison by customers, etc. Statistical methods are generally intended for situations involving quantifiable data, e.g., to produce and analyze run, average and range charts. However, even in cases with limited or poorly defined data, such as construction projects, these applications may prove useful.