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SUBJECT: CONTRACT ESTIMATING SYSTEM

by

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A brief description, background and acknowledgments.

This system replaced the existing interim Contract Estimating System and allowed a complete change in the philosophy of the Department from using weighted bid prices in obtaining a statewide average price for use in cost estimating to that of bidding just as any other contractor. The preliminary design of this system was undertaken by a consultant in mid 1972 and completed in May, 1973. Programming began in July, 1973 and was complete in Dec, 1973. Implementation was completed in early 1974. The final system design was accomplished thru the combined efforts of Ed Fishback, Bill Woolery and Graig Kittendorf of IS&S, utilizing the design documentation prepared by the consultant. The users who contributed most by dictating system requirements were Ed Dady, and Larry Kelley of the Estimates Office.

Late in 1984 it became apparent an update of the system was needed in order to utilize advances in equipment and methods of doing designated tasks. With information from the users phase I of a major modification was begun. An increase in the efficiency of the system and ease of inputting data was the ultimate goal.

Phase I of the modification was completed thanks to the effort of the DOT Programming Office, Preliminary Estimates and Engineering Support Services.

Phase II was completed the later part of 1985 along with the implementation of the NEW Long Range Estimating system which is in use now and has recieved excelent reviews from the Federal Highway Administration.

SUBJECT: CES DATA ELEMENTS

There are three Index Sequential Files which make up the Contract Estimating System:

1. The MASTER FILE:

Twelve different record formats which contain statewide and county data, Standard Resources, Crews, and Task, and all Pay Items.

2. The REFERENCE FILE:

One record format and is used to cross reference the Pay item number to the Pseudo Number for access to the Master file.

3. The JOB FILE:

Five different record formats which contain pay items and job characteristics for construction projects for the purpose of cost estimating.

Subject: CES OVERVIEW:

PURPOSE: To describe what the system does and to explain its role in the Florida Department of Transportation Integrated System.

The purpose of the Contracts Estimating System (CES) is to automate as much as possible the various reports, procedures and computations necessary to produce accurate, timely contract cost estimates in the same manner as that of a contractor in preparing his bid. This requires the maintenance of a great deal of information contained in three (3) separate files, all residing on a direct access device in the Tallahassee computer Center.

The first of these files is called the CES Master Pay Item File. It contains all of the information necessary to compute cost of a unit of material in place utilizing tasks and the direct material cost. Standard tasks are composed of standard crews and likewise, the crews are composed of resources (labor, equipment and materials) contained within the file. The cost thus obtained can then be adjusted by predetermined factors for the job conditions and location. Other data contained in this file but not necessarily related to the actual estimating process includes, but is not limited to:

1. Gainesville testing data related to test run during the actual construction of the project.
2. Standard item description, unit of measure and related information.
3. Pay item history information as obtained from the Contracts Administration System.
4. Pay item final quantities and amounts as obtained from the Contracts Reporting System.

The next file to be discussed is the CES Job Estimates File. It contains all of the job headers or characteristics as provided by the various design sections throughout the department. It also holds the Work Program Number which is utilized to access job information from other file in other systems. The balance of the data contained in this file consists of all the pay items, their quantities and any overrides, by design function for the entire job.

The last file is the CES Cross Reference File. Just as its name implies, its only purpose is to relate pay item numbers to the pseudo numbers contained in the master file.

The system design was directed toward one time entry of each piece of information, a minimum of duplication of data, as much sharing of data between users as possible & a thorough edit of all data before it is put into a file so that all reports can be printed rapidly with a bare minimum of input requirements. All of this involves cooperation and communication between the users and programmers both in the district and Tallahassee.

The system is comprised of twenty five or more programs and supports all departments within the DOT in some way shape or function to some level with information.

LRE (Long Range Esimating System) has been developed as an

aid for estimating contract costs for future jobs of which only limited information is available.

CES is only one of five in the total Intergrated System, a schematic of which is shown on the following page. The other four parts of the total are as follows:

2. LRE Long Range Estimaing.
3. CAS Contracts Administration System
4. CRS Contracts Reporting System
5. CCS Contracts Certification System

Documentation covering these other systems is available under separate covers.

A. Resources

- (1) Manpower skills and wage rates
- (2) Equipment and lease rates
- (3) Support material and unit rates
- (4) County data
 - (a) Soil permeability factor
 - (b) Average annual rainfall factor
 - (c) Population density factor
 - (d) Wage Rate Distribution factor
- (5) Economic conditions
 - (a) Construction Index
 - (b) Common Labor Index
 - (c) Skilled Labor Index
 - (d) Material Cost Index

B. Crew Configurations

- (1) Title and Production rate
- (2) Description of Effort
- (3) Resources, Quantity and Time

C. Tasks

- (1) Title, Specification Reference No.
- (2) Description of Activities
- (3) Crew Configurations
- (4) Pay Items related to Task
 - (a) Description Standard
 - (b) Units of Measure
 - (c) Direct Material Cost
 - (d) Production Rate

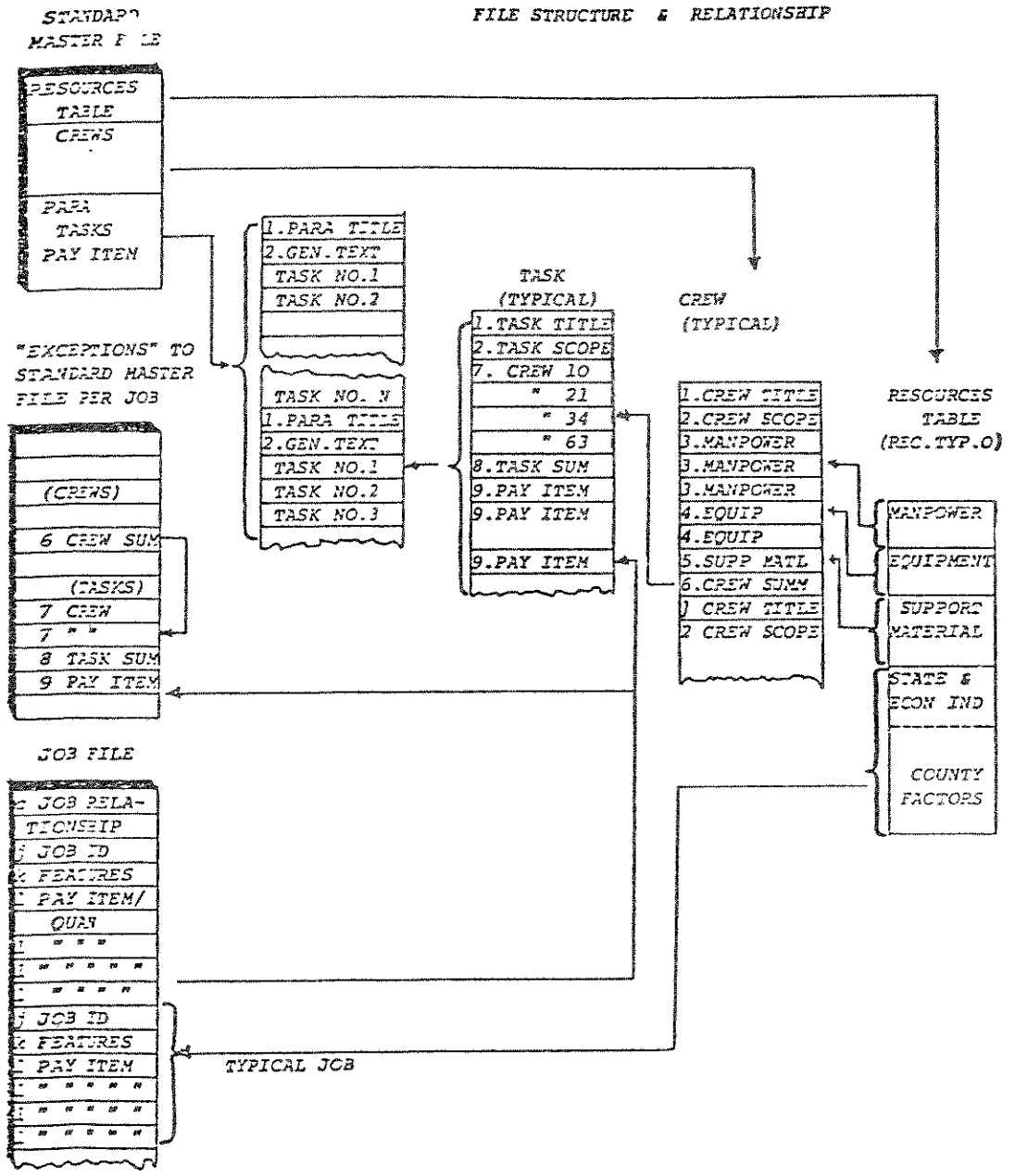
4. REQUIREMENTS

The Unit Price Library was designed to meet the Department's requirements of cost control concerning construction projects. A major premise in the design was to support all design functions as early as possible with current data and have the means to maintain it.

The files were designed to serve the following functions and their requirements.

UNIT PRICE LIBRARY

FILE STRUCTURE & RELATIONSHIP



UNIT PRICE LIBRARY

FILE STRUCTURE & RELATIONSHIP

