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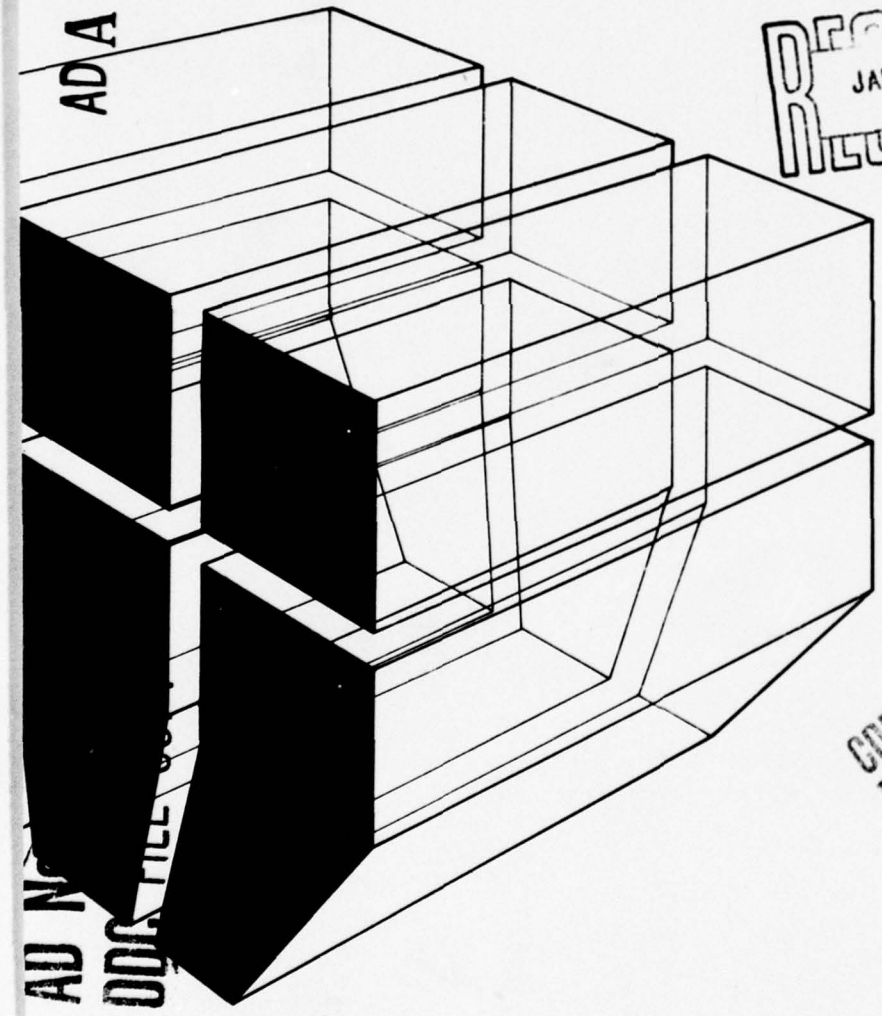
CIVIL WORKS CONSTRUCTION COST INDEX SYSTEM (CWCCIS)



by
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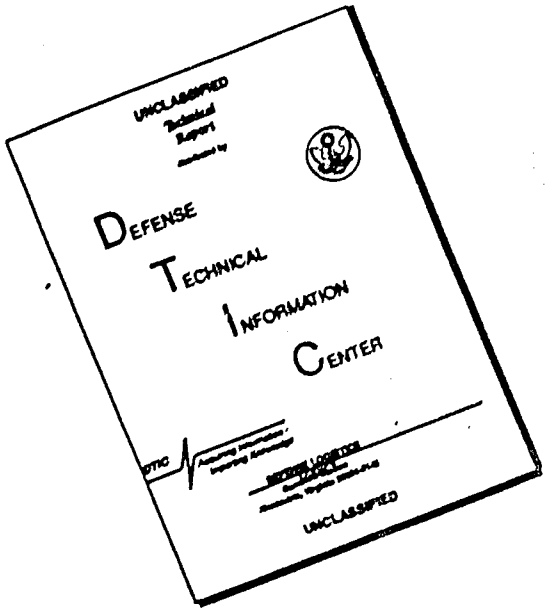

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This report describes a system of cost indices for updating early government estimates of the costs of heavy construction in civil works projects. The system provides national indices specific to 19 major construction types (features). The feature indices are computed from three levels of subindices which provide increasing detail. The first level below the feature consists of indices for five primary categories of work—earthwork (E), concrete (C), steel (S), mechanical (M), and electrical (L)—and a secondary category, buildings (B). The third level breaks each category into labor (L), plant (P), and material (M)

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resource classes. The lowest level provides indices for the actual resource types used in the construction for each resource class.

The user can either use the feature index as provided or modify it by changing the weighting of one or more of the items in the three lower levels. The indices can also be regionalized by substituting region-specific resource type indices at the lowest level.

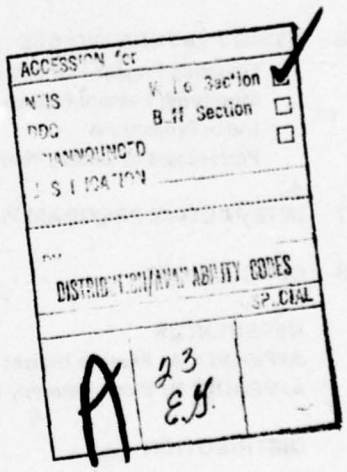
FOREWORD

This work was performed for the Office of the Chief of Engineers (OCE), Directorate of Civil Works, Engineering Division, Project Engineering Branch, under Intra Army Orders CWE-A-77-5 and CWE-A-77-1. The OCE Technical Monitor was Mr. E. B. Wilsie.

The work was conducted by the Management Systems Branch (FAM), Facility Acquisition and Construction Division (FA), U. S. Army Construction Engineering Research Laboratory (CERL) under the general supervision of Mr. E. A. Lotz (Chief, FA) and Dr. O. E. Rood, Jr. (Chief, FAM). The Principal Investigator was Mr. U. R. Poskus.

Appreciation is expressed to Ms. K. K. P. Dornan for her invaluable assistance throughout the study and to Mr. George Stamas, Mr. Steven Stawarz, Mrs. Denise Clark, and Mrs. Linda Strickman, without whom the work would not have been manageable.

COL J. E. Hays is Commander and Director of CERL, and Dr. L. R. Shaffer is Technical Director.



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1 INTRODUCTION

Background

Project costs for Corps of Engineers civil works projects are initially estimated before concept designs are prepared. These projects are not immediately authorized for construction; it may in fact be several years before appropriations are made for even the detailed design phase. During this interval, escalation (inflation)* usually results in the current costs being higher than previously estimated. For programming requirements, the estimates must be updated annually. Two methods of accomplishing this updating are available to Corps Districts: (1) performing a detailed re-estimate, or (2) applying an inflation (escalation) factor to the latest estimate. Both methods have advantages and disadvantages. Re-estimating gives results that are at least as accurate as the prior estimate, but it is very time-consuming and is therefore not practical on a yearly basis because of the limited number of personnel available at the District level. Updating using an escalation factor can be done very quickly, with acceptable accuracy.

The current Corps practice is to update project estimates by re-estimation on an as-needed basis and to use an escalation factor when re-estimation is not required. Divisions often provide this escalation factor to their Districts. Most often, the factor is one of the many published composite construction indices—usually the *Engineering News Record* (ENR) Construction Cost Index (CCI). Although numerous cost indices are available (Chapter 3), all have limitations in Corps civil works applications. A system of indices specifically applicable to such projects is therefore needed.

Objective

The objective of this study is to provide Corps civil works Districts with a detailed system of cost indices for updating cost estimates prior to the official Government estimate for contract award. The indices must be specific for each of the major civil works features and be free of such influencing factors as bid climate and seasonality. The system must standardize the procedures for all civil works Districts, and be easy to use, easily understood, at least as accurate as the existing cost estimate updating methods, and simple to keep current.

Approach

Eleven features with cost account numbers were initially selected for indexing. However, because dissimilarities between items within some cost accounts prevented their being averaged together (e.g., earth and concrete dams in the dams feature), indices were actually developed for 19 distinct feature types.

It was determined that a four-level hierarchy of costs and index numbers would be required to accurately construct feature-specific indices. The highest level of the hierarchy is the FEATURE index, which is computed from the three levels of more detailed subindices (Figure 1). The first level below the FEATURE, called CATEGORY, consists of indices for five primary categories of work—earthwork, concrete, steel, mechanical, and electrical—and a secondary category, buildings. The next level is called RESOURCE CLASS. It breaks each category into labor, plant, and material resource classes. The weighted index values for these classes are computed from the lowest level of the hierarchy—the RESOURCE TYPES. This level of the hierarchy contains indices for the actual types of labor, plant, and material used in construction. Indices were not developed for every resource type. Instead, key indicators containing resources whose index values change at the same rate were chosen, because a manageable number of these indicators accounted for most of the cost of a particular feature; the remaining resource types, which individually contributed less than 1 percent of the cost, were summed into a resource type called "Other."

More than 80 existing detailed Government estimates were analyzed in developing the indices. Each estimate was divided into features; each feature was then separated, cost item by cost item, into categories. The resource classes within each category were then separated into groupings of resource types, and their costs were accumulated.

The resource class costs for each category, by resource type, were weighted according to the cost of that resource type (within class and category). The resource class and category weights were similarly determined based on the resource type weights.

*The term "escalation" is used instead of "inflation" in the construction industry and is therefore used in this report.

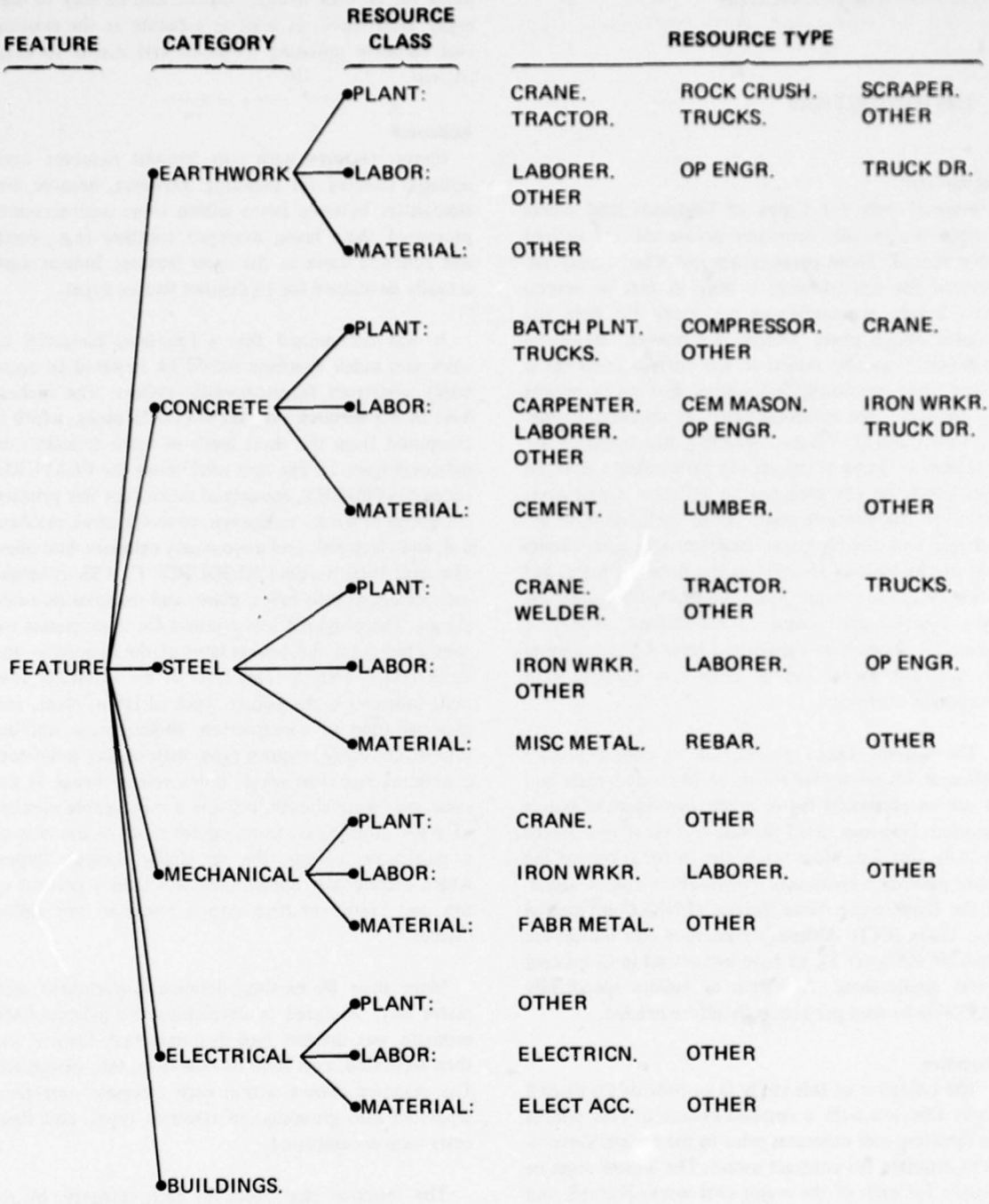

Figure 1. Hierarchy of levels in the Civil Works Construction Cost Index System.

Scope and Applicability

The indices presented in this report are specifically designed for typical civil works construction. Only indices for costs have been developed; benefits are not considered.

This system is designed to be used by all civil works Districts that produce the Project Cost Estimate (PB-3), ENG Form 2202 reports for their projects; most specifically, it is designed for use by Estimating Sections.

Organization of Report

Chapter 2 defines and provides examples of index numbers, and Chapter 3 briefly describes three important sources of existing construction cost indices. Chapter 4 describes the features for which indices were developed, and Chapter 5 explains the development of the indices, which are presented in Appendix A. Chapter 6 delineates how the indices can be used in updating project estimates and explains the procedure for modifying the indices for a particular region or a particular atypical project. Chapter 7 describes a prototype interactive computer program which performs the calculations required to modify the indices.

Mode of Technology Transfer

Technology transfer will be accomplished by incorporation into Engineer Manual (EM) 1110-2-1301[1] or through a new Engineer Regulation (ER) or Engineer Circular (EC) in the 1110 (Engineering and Design) series. The indices presented in Appendix A will be updated regularly (at least yearly) and distributed to all civil works Districts.

2 INDEX NUMBERS

An index number is a ratio between the cost of a resource or composite of resource costs at one period of time and the cost of the same resource or composite at a specific previous date or period called the base period (or base year). The index number thus indicates the percent change in cost that has resulted from escalation between the base period and the later date. For example, using 1967 as the base year, if 1 cwt of cement cost $1.20 in 1967 and $2.53 in 1976, the index value for a cwt of cement in 1976 would be:

$$\frac{2.53}{1.20} = 2.108$$

Since the price index for the base year is defined as 100, this index value would usually be expressed as 210.8. This index value indicates that during the period 1967 to 1976, the cost of a unit of cement rose 2.108 times. Because such values relate the price of an item to a base year, they are termed price relatives.

A composite index (number) results when two or more resources are combined to form a single index number. For example, combining various labor resource types results in a composite labor index.

The base year is important, since it is the reference point. In published indices, the base year is either a year or period of years during which prices were reasonably stable. Many published index sources currently use 1967 as the base year. The index user can redefine the base year to the one that is most useful to him* by dividing the index value or item price of the new base year into the other index values or item prices. For example, for an item that cost $1.00 in 1967, $1.50 in 1972, and $2.10 in 1976, the 1972 and 1976 indices for a base year of 1967 are 150 and 210. The indices for a base year of 1972 are thus:

for 1967	for 1976
$\frac{100}{150} = .6667$ or 66.67	$\frac{210}{150} = 1.4000$ or 140.0

This indicates that the price of the item was 66.67 percent of the 1972 price in 1967 and 140.00 percent of the 1972 price in 1976.

3 EXISTING CONSTRUCTION COST INDICES

Numerous construction cost indices can be found in trade journals. Three important sources are outlined below.

Engineering News Record

One of the better known sources of construction cost indices is the *Engineering News Record* (ENR).

[1] *Engineering and Design: Cost Estimates, Planning and Design States*, EM 1110-2-1301 (Office of the Chief of Engineers [OCE], 17 March 1972).

*The pronouns he, him, and his are used to denote both the masculine and feminine genders in this report.

This journal provides selected material, labor, and plant indices for both individual items and composites. Composite indices are given for particular resource classes (such as the Construction Materials Index for materials) and for several resource classes (the Construction Cost Index [CCI]). Since these indices are not prepared for a specific type of construction project, they may be called general-purpose construction indices. (Specific indices are those prepared for a particular project type or project class, with the resources being selected to reflect the typical types of resources used in the project.)

The CCI, which is often used in updating civil works estimates, is a composite of indices for 20 cities' average hourly wage rate for common labor, mill price of steel shapes, and price of Portland cement and lumber.[2] Because the mix of resources only partially reflects the mix in any of the standard civil works features, and because plant costs have been completely excluded, the CCI is not considered to adequately reflect civil works construction.

Bureau of Labor Statistics

The Bureau of Labor Statistics (BLS) of the Department of Labor provides index values for more than 2600 resources and resource composites and is considered a prime source for index values.

Bureau of Reclamation System of Indices

The Engineering and Research Center, Office of Design and Construction Division of the Engineering Support Estimates and Analysis Branch of the Bureau of Reclamation, Denver, CO, has developed a comprehensive system of indices, some of which are directly comparable to the indices presented in this report. The indices were developed for use in the 17 western states in which the Bureau of Reclamation has construction responsibility, but the system can provide regional indices for any continental United States (CONUS) location, based on labor costs in that region.

The Bureau provides its indices to its regional offices twice per year (previously quarterly) in a booklet called *Construction Cost Trends*. The indices are also published quarterly in the ENR.

Construction Cost Trends provides feature-specific indices for 10 of the Bureau's typical projects (e.g., dams), as well as indices for selected subfeatures (e.g., spillways). Also provided are selected construction equipment indices for eight categories of equipment and a valuation index for land rights of way.

BLS publications are the primary sources of input data for the plant and material indices. Labor cost data are extracted from the ENR as two types only: skilled and unskilled. The costs and weighting of the resources are extracted from contractor estimates; no input is provided by the Bureau engineer's estimate (comparable to the Corps' Government estimate).

While no rigorous tests of the validity of the indices have been performed, the Bureau's composite index is periodically compared to four other composite indices—the Associated General Contractors index, the Bureau of Public Roads composite index, the ENR CCI, and the Department of Labor cost of living index. Since 1967, the Bureau's composite index has followed the same trend as the ENR CCI, but has been consistently lower in value (Figure 2).

Some of the Bureau of Reclamation's indices are directly applicable to civil works construction, and a comparison of the indices developed in this study with the Bureau's indices shows that they follow similar trends. However, the Corps can use only a few of the Bureau's indices directly, and tailoring the indices to project-specific conditions is difficult.

4 DESCRIPTION OF FEATURES FOR WHICH INDICES WERE DEVELOPED

Eleven features with cost account numbers were selected for indexing. Because of dissimilarities between items within some cost accounts, this list was expanded to the 19 distinct feature types shown in Table 1.

The feature Relocations, cost account number 02, is not specifically covered, but relocations of roads, bridges, and railroads may be updated using the indices for features 08A, 08B(1), 08B(2), and 08C.

An index was not developed for beach replenishment, cost account number 17, since that type of work is usually performed by hydraulic dredge and the estimates are straightforward. Therefore, it is best to re-estimate when an update is required. If land-based equipment is used to construct this feature, the index

[2] "ENR Indexes Gained About 8.5% in 1976," *Engineering News Record* (24 March 1977), pp 66-67.

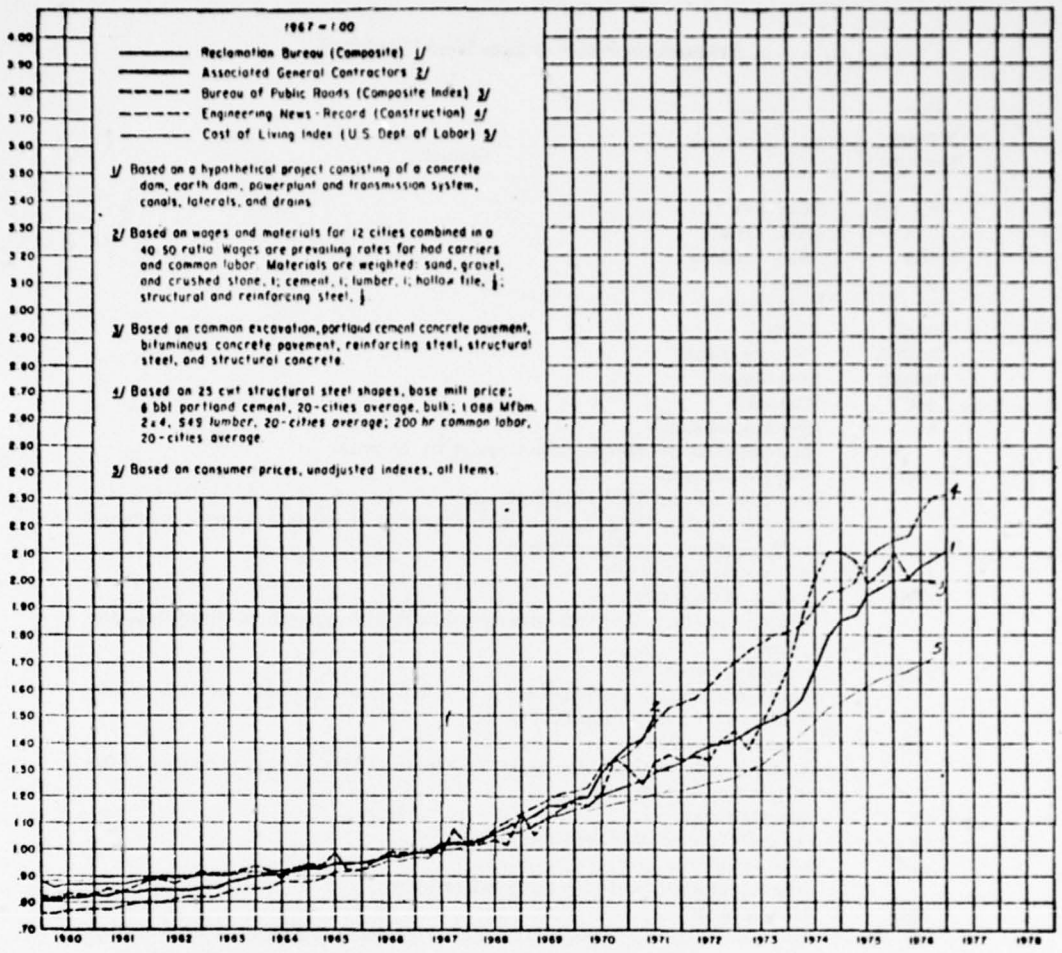

Figure 2. Comparison of cost indices. (From *Construction Cost Trends* [Bureau of Reclamation, July 1977]).

for cost account number 11A, Levees and Floodwalls, may be used.

The following descriptions of the 11 features with cost account numbers were extracted from ER 11-2-240.[3]

03. Reservoirs. This feature includes clearing lands in reservoirs and pools of debris, brush, trees, improvements, and structures. Any salvage, obtained by sale or disposal by the Government, of material removed in clearing operations is credited to this feature. This feature also includes bank stabilization, shoreline improvement, firebreaks, fencing, boundary line survey and marking of land which has been acquired or is to be acquired, rehabilitation of natural resources, erosion control, drainage, and rim grouting and mine sealing, etc., to prevent leakage. Site clearing, grouting, etc., incidental to and required for specific construction features is included as part of the construction features. Trash booms and barriers provided for general project use, i.e., to protect all features such as dams, spillways, power intakes, etc., will be included in this feature. Facilities provided for specific purposes, such as spillways, will be included in the appropriate feature or subfeature with which associated. During the Advance

[3] *Civil Works Activities, Construction and Design*, ER 11-2-240 (OCE, 1 November 1974).

Table 1

Features for Which Indices Were Developed

Cost Account Numbers	Feature
03	Reservoirs
04A	Dams, earth
04B	Dams, concrete
05	Locks
07	Power plants
08A	Roads
08B(1)	Concrete bridges
08B(2)	Steel bridges
08C	Railroads
09A	Channels and canals (based on estimates containing only earthwork job items)
09B	Channels and canals (based on estimates containing both earthwork and concrete work. This feature provides for concrete lining, concrete slope protection and drainage systems in addition to the earthwork found in feature 09A.)
10	Breakwaters and seawalls
11A	Levees and floodwalls (based on estimates for levees with heaped earth with aggregate or riprap slope protection)
11B	Levees and floodwalls (based on combination of levees and floodwalls that have structural concrete work including walls or slope protection)
11C	Levees and floodwalls (based on estimates that have levees, floodwalls, and floodgates and contain all five primary categories of work)
13	Pumping plants
15	Floodway control and diversion structures
16A	Bank stabilization (based on estimates with only earthwork category)
16B	Bank stabilization (based on estimates with large amounts of riprap slope protection and major drainage systems)

Engineering and Design phase, this feature will be charged only with costs incurred for boundary line surveys and monumentation of land to be acquired.

04. Dams. This feature includes dams and all other water collecting and storage facilities, whether man-made or natural, together with appurtenant diversion, regulation, and delivery facilities and spillways, outlet works, and power intake works, whether separate from the dam or not. In the case where the powerhouse is an integral part of the intake dam, the cost of the power intake dam is included in the feature "Power Plant." Any auxiliary dams or spillways detached from the main structures and floating trash and drift booms and barriers which are provided to protect the spillway or other dam facilities only are included in this feature. The power intake works include such power items as forebay, penstocks, tunnels, surge tank, gates, operating equipment, and appurtenances. Service roads and service railroads on the dam are included in this feature. The additional cost of relocating highways and railroads across the dam is included in the feature "Relocations."

05. Locks. This feature includes facilities to provide for passage of waterborne traffic, including gates, valves, operating mechanisms, cribs, fills, lock walls, guide and guard walls, operating buildings, and excavation therefor. The lock structure is considered that part of the work within the limit lines extending from the upper end of the upper guide or guard walls to the lower end of the lower guide or guard walls, including

dolphins within the lock approaches for tie up, guard, or guide purposes. Excavation or dredging required in approaches outside of the limits defined above for the lock structure is included in the feature "Channels and Canals." The cost of a cofferdam or the properly allocable amount thereof, if required, is charged to this feature. Locks provided in connection with facilities for the prevention of encroachment of salt water are included in this feature. Locks in connection with fish facilities are included in the feature "Fish and Wildlife Facilities."

07. Power Plant. This feature includes those facilities specifically required for the production of power other than those included in the feature "Dams," and consists of the following: powerhouse, turbines, and governors, generators, accessory electrical equipment, miscellaneous power plant equipment, switchyard, and tailrace improvement for power. In the case where the powerhouse is an integral part of the power intake dam, the cost of the power intake dam is included in this feature. Where the structure of a dam also forms the foundation of the powerhouse, such foundation is considered a part of the dam. The cost of a cofferdam or the appropriate part thereof is charged to this feature. Units for production of power for the operation only of navigation, flood control, or other purpose projects (excluding those projects with power as a feature) are included in other features as appropriate.

08. Roads, Railroads, and Bridges. This feature includes permanent roads, railroads, and bridges required for access and other purposes in connection with the construction and operation of the project. This feature does not include roads, railroads and bridges chargeable to the feature "Relocations," access roads to recreation facilities and areas, which will be charged to the feature "Recreation Facilities," and service roads and service railroads on structures, which will be charged to the appropriate feature for the structure.

09. Channels and Canals. This feature includes all forms of excavation (including dredging, preparation of spoil disposal areas, and attendant facilities) necessary for the development and construction of channels, or improving existing watercourses for flood control and major drainage. Excavation of natural watercourses to provide adequate depths for navigation is included. Excavation for specific structures, such as dams and locks used in the development of waterways and conservation of water resources, is included with such structures. The removal of trees, brush, accumulated snags, drift, debris, water hyacinths and other aquatic growths from canals, harbors, and channels in navigable streams and tributaries thereof for navigation is included in this feature. Excavation, clearing and removal of accumulated snags, drifts, debris, and vegetable growth from streams for flood control and major drainage purposes also is included. Included in this feature are revetments, linings, dikes, and bulkheads constructed as channel improvement works for flood control or navigation, as against such items constructed for bank stabilization only. Also included are jetties constructed in connection with flood control channel improvements.

10. Breakwaters and Seawalls. This feature includes breakwaters, seawalls, piers, and like improvements constructed in connection with the protection of beaches, harbors, shores, and port facilities against the force of waves and encroachment of seas or lakes by direct wave action. Jetties, groins, and like structures provided in seas, lakes, tidewater reaches of rivers and canals, and harbors to control water flow and current, to maintain depth of channels, and to provide protection, are included in this feature.

11. Levees and Floodwalls. This feature includes embankments and walls constructed to protect areas from inundation by overflow from creeks, rivers, lakes, canals, and other bodies of water. This feature consists of such items as: service roads on levee crown or landside berms, road ramps, closure structures, seepage control measures, erosion protection measures on levee slopes and on berms and bank slopes when they are an integral part of the levees or floodwalls; and drainage facilities, constructed to provide means for the passage of accumulated drainage and seepage water and sewage from the protected area over or through levees and floodwalls, comprising such items as interceptor and collection sewers and ditches, and pressurized sewers and drainage structures, including outfalls through levees or floodwalls. Levees locally called dikes are included in this feature. Pumping plants are included in the feature "Pumping Plants."

13. Pumping Plants. This feature includes pumping plants constructed to pass accumulated drainage and seepage water and sewage from the protected area over or through levees and floodwalls.

15. Floodway Control and Diversion Structures. This feature includes floodway control and diversion structures to provide for the release of flood waters from streams where discharges exceed flood capacity of the stream, including such items as diversion dams, gated or ungated discharge structures, training walls,

stilling basin, and those adjacent embankment sections forming part of the control structure. Construction of channels and levees not forming part of the main control structure, but necessary for operation of such structures, is included in the appropriate feature "Channels and Canals" or "Levees and Floodwalls."

16. Bank Stabilization. This feature includes revetments, linings, training dikes, and bulkheads for stabilization of banks and watercourses to prevent erosion, sloughing, or meandering. Bank stabilization constructed in navigation channels or in connection with flood control channel improvement is included in the feature "Channels and Canals."

5 DEVELOPMENT OF THE CORPS OF ENGINEERS CIVIL WORKS CONSTRUCTION COST INDEX SYSTEM (CWCCIS)

Background and Definitions

A typical civil works project consists of one or more contracts for work, each with a Government estimate. The contracts are broken out into bid item numbers corresponding to items of work. Each item deals with a task or work package and details the labor (L), plant (P), and material (M) resources required for that task, the hours required, the cost per hour, and the total cost per bid item for each resource type.

The labor resource class includes all on-site workers except administrators. First-line supervisors (foremen) are included.

The term "plant" is generally applied to construction machinery, tools, and equipment which are fixed or stationary during construction, such as concrete batching and mixing units, aggregate production units, and conveyor systems. The term "equipment" is usually used for portable or mobile items such as power tools, tractors, cranes, and trucks. For estimating purposes and in this study, however, plant and equipment items have been classified together under the term "plant."

The material resource class includes all items that remain as part of the constructed facility (such as cement) or are expended in construction (such as lumber for forms). Thus, an item could be classified in the plant resource class if used in construction but removed from the site at the completion of construction, but categorized as material if it remains as a part of the feature after construction. For example, dewatering pumps would be plant, but pumping plant pumps would be material. Supplies are included in this resource class.

Detailed Government estimates were analyzed to determine the types of labor, plant, and materials used, the weighting of the types within resource classes (L, P, M), the weighting of resource classes within the primary work categories, and the weighting of both primary and secondary work categories in the feature (Figure 1).

The individual bid items in the detailed Government estimates appeared, in general, to fall into five primary and one secondary easily separable categories of work:

1. Earthwork (E). This primary category generally involves the excavation, moving, and placement of earth or rock.

2. Concrete work (C). This primary category generally involves all work related to preparing and placing concrete.

3. Steel work (S). This primary category generally involves work with metal, including reinforcing bars.

4. Mechanical (M). This primary category generally involves construction of mechanical systems and installation of preassembled mechanical components, including pumps, power units, and trains, excluding turbines.

5. Electrical (E). This primary category generally includes all electrical work required for the feature, including turbines when appropriate.

6. Building (B). This secondary category provides a composite index for structures that are part of a feature.

The indices for the primary work categories were built up from resource class and resource type data. The secondary category, however, does not require a finer breakdown into resources; it is represented by composite indices and exists only at the category level. Only a few of the features are represented by all six categories. In fact, most features are only represented by one or more of the five primary categories.

Work Category Analysis

The first step in developing the work category indices was to disaggregate more than 80 detailed Government estimates into the six work categories using the checklists in Appendix B of EM 1110-2-1301. An estimator analyzed these checklists and assigned each checklist item to a work category that indicated the predominant type of work done in that item (Appendix B). In some instances, such as when the material used in the item logically falls under the category steel, but the labor and plant are earthwork, a clear disaggregation was not possible. In such cases, the column headed "material" has an S for the steel item, while the "labor" and "plant" columns have an E for earthwork. In general, each checklist item corresponds to one or more bid items. The reasoning used in the analysis for three features–reservoirs, dams, and locks –is described below as an example.

1. 03 RESERVOIRS. The major activities in reservoir operations include clearing of trees, removal of brush and debris, removal of structures, and improvements, mine and well sealing, and boundary line surveying and marking. One weighted earthwork type index could be developed for all the above activities, or four subfeature indices could be developed: structure demolition, clearing, earthwork improvements (drainage, rim grouting, erosion control, boundary marking), and miscellaneous (mine and well sealing, etc.). The first alternative was selected to keep the system simple.

2. 04 DAMS. Subfeature indices for all six work categories are required for dams, as described below.

a. Earthwork category. Earthwork includes construction and removal of cofferdam(s), all excavation and foundation work (except grouting materials), and all embankment work (in earth dams). It also includes the labor and plant for placing pipe and instrumentation, although the pipe used in drainage systems would be considered steel or concrete.

b. Concrete category. Concrete includes all the concrete items in both concrete and earth dams. Aggregate and portland cement, the batch plant, water systems, concrete buckets, cranes, carpenters, forms, laborers to place, and cement finishers are all elements. The labor and plant used to embed metal or instruments in concrete would be classified as concrete. Concrete-reinforced drainage pipe and foundation grouting mix are also concrete items. Rubber water stops are classified with concrete work. The reinforcing steel used in concrete is put into the steel category.

c. Steel category. Steel includes the plant, labor, and materials used in installing reinforcing steel, steel pipe, structural steel, steel tunnel liner, steel piling, metal water stops, gates of various types (spillway, sluice, hoist), steel access bridges, platforms, handrails, ladders, and fencing. The labor involved in placing fencing is classified as earthwork, however, since it is more similar to those activities than to activities typically done by ironworkers.

d. Mechanical category. Mechanical items include air conduits, water service piping, the cooling pipe system, pumps, and operating machinery for all gates.

e. Electrical category. The electrical component includes all instrumentation, although placement of instrumentation is classified as an earth or concrete item. Power equipment, electrical conduits, elevators, lighting, and telephone systems are all included.

f. Building category. The building component includes actual facilities costed to the feature account.

3. 05 LOCKS. The subfeature indices for locks are very similar to those for dams.

a. Earthwork category. Earthwork items include construction of the cofferdam, excavation, and foundation work. Sheet steel piling materials are included in steel, although the labor and plant are earthwork items as are the labor and plant for installing pumps and pipelines.

b. Concrete category. Concrete items include all concrete walls, structures, and floors, plus foundation grouting. The labor and plant to embed metal and instrumentation in concrete are included, as is concrete pipe, and rubber and plastic waterstops. The reinforcing steel in concrete is not included.

c. Steel category. Steel includes plant, labor, and materials for reinforcing steel, sheet steel piling, gates, metal foundation drains, wall armor, floating mooring bits, check posts, ladders, railings, stair treads, trash racks, metal doors and frames, and fencing materials.

d. Mechanical category. The mechanical items include operating machinery for gates, valves, pumps, and piping system in lock buildings (hydraulic, compressed air, gas supply).

e. Electrical category. Electrical items include all instrumentation materials, power lines, standby generators, lighting systems, and traffic signal systems.

f. Building category. The building items, as for dams, include structures such as the operation and laboratory buildings.

The next step was to assign a work category label (E, C, S, M, L, B) (see Figure 3) to each item in each detailed Government estimate. Each of these categories was then analyzed to determine the labor, plant, and material resource types used and the sum of the estimated costs for each category. This resulted in a list of recurring, predominant labor, plant, and material types for each of the E, C, S, M, L, and B categories (Tables 2, 3, and 4).

The individual resource listings are not intended to be comprehensive. As mentioned earlier, only the major resource types (key indicators) are listed. Many resources within a resource class, though apparently dissimilar, have indices that change at the same rate. A prime example is foremen; although their hourly cost is normally higher than that of laborers, the two costs generally change at the same rate. This permitted grouping foremen with laborers. The many resource types that are necessary on a construction site, but which contributed only slightly to the resource class were consolidated into a category called "other," and the composite index for that resource class was applied.

Weighting Scheme

Using the lists developed in the previous step, the weighting schemes for individual resources (e.g., car-

Item No.	Description	Quantity	Unit	Unit Price	Estimated Amount
04 1.E	Clearing and Grubbing		L.S.	xxx	$ 25,200.00
04 2.E	Care of Water		L.S.	xxx	417,000.00
04 3.E	Excavation	663,400	C.Y.	0.32	212,288.00
04 4.E	Borrow				
	a. First 260,000 C.Y.	260,000	C.Y.	0.51	132,600.00
	b. Over 260,000 C.Y.	310,000	C.Y.	0.48	148,800.00
04 5.E	Additional Rolling				
	a. First 20 Roller Hours	20	Roller Hours	17.95	359.00
	b. Over 20 Roller Hours	20	Roller Hours	17.85	357.00
04 6.M	Temporary Pumping Facilities		L.S.	xxx	28,000.00
04 7.M	Discharge Pipe	2,930	L.F.	11.67	34,193.10
	TOTAL				$998,797.10

Work category label
Assigned to this feature

Figure 3. Assignment of work category labels to items in unit price schedule.

Table 2

Labor Types

Code	
01	Carpenters and helpers (CARPENTER)
02	Cement masons, cement finishers, and helpers (CEMENT MASON)
03	Electricians, linemen, and helpers (ELECTRICIAN)
04	Ironworkers, steelworkers, and helpers (IRONWORKER)
05	Laborers and foremen (LABORER)
06	Operating engineers, oilers/greasers (OPERATOR)
07	Painters (PAINTER)
08	Plumbers, pipe fitters, and helpers (PLUMBER)
09	Truck drivers (TRUCK DRIVER)
10	Others (OTHER)

Table 3

Plant Types

Code	
50	Construction machinery and equipment (composite) (OTHER) BLS code 112
51	Portable air compressors (COMPRESSOR) BLS code 1124
52	Power cranes, excavators, and equipment (CRANE) BLS code 1121
53	Mixers, pavers, and spreaders (concrete and bituminous) (MIXERS, PAVERS) BLS code 1127
54	Other mining machinery and equipment (drilling equipment) (ROCK DRILLS) BLS code 1192-03
55	Scrapers and graders (SCRAPERS/GRADER) BLS code 1125
56	Specialized construction machinery (trenchers, rollers, dewatering pumps, portable crushing plants) (SPECIAL MACH) BLS code 1123
57	Tractors other than farm (wheeled, crawler, loaders, attachments) (TRACTOR) BLS code 1128
58	Off-highway equipment (trucks, heavy) (TRUCKS) BLS code 1129
59	Welding machinery and equipment (WELDING EQUIP) BLS code 1133

penters), resource classes (e.g., labor), and work categories (e.g., concrete) were developed based on the fact that (1) the summed cost of the individual primary and secondary categories for each feature equaled the total estimated feature cost (TC) and (2) the sum of the resource class costs for P, L, and M for each category equaled the category cost (Figure 4). However, the following costs associated with a feature were deliberately excluded in determining the weighting of the various resource types:

1. Mobilization and demobilization costs (these costs were included for on-site moves, such as moving a batch plant from one side of a river to the other).

2. Indirect costs.

Table 4

Construction Material Types

Code	
80	All construction materials (composite) (OTHER)
81	Cement, portland (CEMENT) BLS code 1322-0131.13
82	Electrical accessories and equipment (ELECTRICAL) This grouping is an average of the following BLS codes: 1171 wiring devices 1173 motors, generators, motor generator sets 1174 transformers and power regulators 1175 switchgear, switchboard, etc., equipment
83	Explosives (EXPLOSIVES) BLS code 0679-02
84	Fabricated structural metal products (FABRICATED MET) BLS code 107
85	Softwood lumber (LUMBER) BLS code 0811
86	Finished steel products (MISC. METAL) BLS code 1013-02
87	Bars, reinforcing (REBAR) BLS code 1013-0255.02
88	Sand, gravel, and crushed stone (AGGREGATE) BLS code 1321
89	Plates, carbon, A285 (STEEL PLATES) BLS code 1013-0245.03
90	Machinery (MACHINERY) This grouping is an average of the following BLS codes: 1144.04 Hoists and cranes 1141 Pumps, compressors and equipment
91	Turbines (from Bureau of Reclamation *Construction Cost Trends*)
92	Wooden Mattresses Wooden mattresses is an average of BLS codes: 1026 Cable (25%) and 0811 Soft lumber (25%) and Means common labor (50%)

Determination of Index Values

The BLS[4] appeared to be the most authoritative source for the monthly plant and material resource type indices. Monthly construction labor indices were extracted from the Means *Building Construction Cost Data*,[5] because all the resource types required were not available in the BLS data.

The yearly indices were obtained by averaging monthly indices for the year. The yearly index values are very close to what the monthly average was for July of that year. Consideration was given to providing feature index values for 6-month periods based on April and October of each year. However, historical indices for 6-month levels prior to 1975 were not available. A preliminary test on earth dams for April and October of 1975 and 1976 indicated that interpolation of the existing feature index graphs in Appendix A would provide results with acceptable accuracy. Figure 5 compares the graph based on yearly averages with that for April and October values.

[4] *Wholesale Prices and Price Indexes Data* (U. S. Department of Labor, Bureau of Labor Statistics, monthly editions).

[5] *Building Construction Cost Data* (Robert Snow Means Co., Inc., 1971 to 1976).

Feature Cost = E Cost + C Cost + S Cost + M Cost + L Cost + Building Cost

E Cost = E Plant Cost + E Labor Cost + E Material Cost
C Cost = C Plant Cost + C Labor Cost + C Material Cost
S Cost = S Plant Cost + S Labor Cost + S Material Cost
M Cost = M Plant Cost + M Labor Cost + M Material Cost
L Cost = L Plant Cost + L Labor Cost + L Material Cost

E Plant Cost = Summed costs of individual resources, i.e., scrapers, compressors, etc., used in earthwork for that feature.

Weighting: E Category weighting $= \frac{\text{E Cost}}{\text{Feature Cost}} \times 100$

E Plant weighting $= \frac{\text{E Plant Cost}}{\text{E Cost}} \times 100$

E Plant scraper weighting $= \frac{\text{Summed Scraper Cost}}{\text{E Plant Cost}} \times 100$

Figure 4. Cost and weight formulas.

The indices presented in Appendix A are national averages; that is, they are generally applicable in any CONUS location. The indices can, however, be regionalized, as described in Chapter 6.

Verification of Sample Size for Cost Breakdown

Wherever possible, a sample of five or more estimates from different Districts and regions was used to compute the weights and resulting indices for each feature. This sample size was used to insure that the indices would reflect the general case in terms of resource types represented and their weights and would be general for geographical location.

As a test case, ten earth dams were analyzed. Comparison of the category and feature indices for randomly selected samples of two, four, six, eight, and all ten estimates showed no significant differences between any of the sample sizes. These results indicate that if care is taken in selecting feature estimates to insure that the feature has no unique characteristics, a sample size of four to six will provide acceptable accuracy in the feature index value. Table 5 shows the results of this test.

6 USING FEATURE INDICES

Updating Project Estimates

Appendix A presents the feature indices developed in this study. The indices provide an acceptable means of updating existing estimates. A word of caution is required, however; while re-estimated and index-updated project costs are completely comparable, using the index values to update a project that has not been re-estimated in the past 3 or 4 years is not recommended. The recommended procedure is to re-estimate projects at least every 3 years and use the index values to update during the interim years. This procedure would permit accounting for improvements in construction techniques, thus increasing the credibility of the estimates.

Feature indices are provided for the current year and for the nine previous years. The following procedure should be used to update a cost estimate:

1. Since the indices all have a base year of 1967 and the index value shows the increase in costs since 1967, a conversion is required to transform the current index

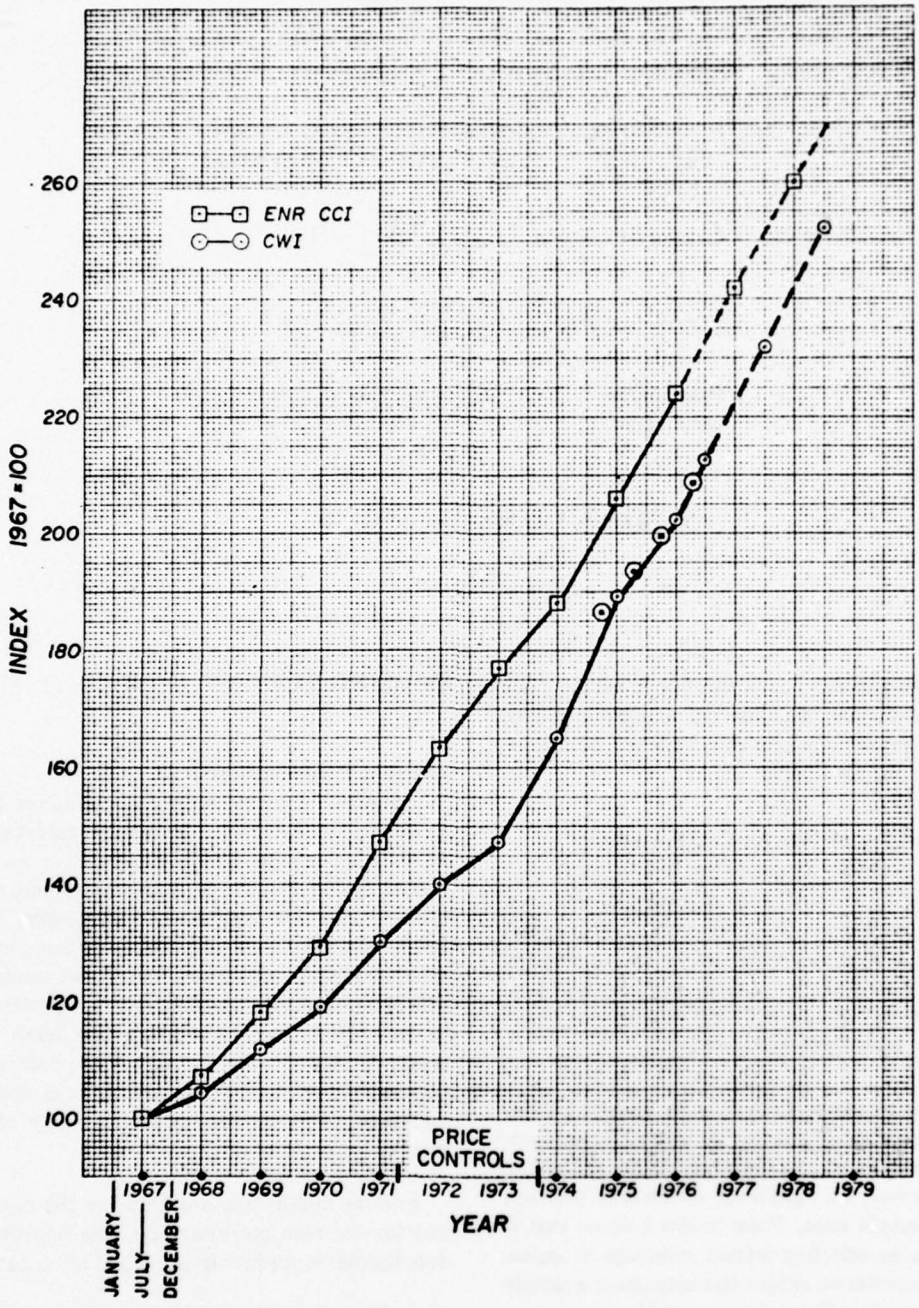

Figure 5. Comparison of yearly average indices with April and October indices for earth dams.

Table 5

Sample Size Test Results for Feature Indices

Index Year	Sample Size 2	4	6	8	10*	Ave**	Std Dev
1967	100.00	100.00	100.00	100.00	100.00	100.00	0.00
1968	105.26	105.25	105.33	104.71	104.83	105.14	0.29
1969	111.92	111.21	112.30	112.14	111.51	112.14	0.16
1970	120.70	120.50	119.77	120.45	119.67	120.36	0.40
1971	131.66	131.57	131.72	131.71	130.77	131.67	0.07
1972	143.41	142.48	142.59	142.40	140.58	142.72	0.47
1973	148.82	149.13	149.31	149.00	147.39	149.07	0.21
1974	165.96	165.80	166.10	165.95	165.14	165.95	0.12
1975	193.16	190.75	191.01	191.25	189.57	191.54	1.10
1976	205.33	205.36	205.62	205.33	202.60	205.41	0.14

* Actual indices for earth dams, based on ten samples.
** Average of the indices for sample sizes of two, four, six, and eight.

to a base year corresponding to the year of the most recent update or estimation date of the cost estimate to be updated, whichever is later. The current index value is transformed by dividing it by the index value of the date of the estimate. For example, for an earth dam (04A) whose $15,000,000 1975 cost estimate is being updated to reflect its cost in 1976, the index would be converted to the new base year as follows:

Index for earth dams for 1975 = 189.57

Index for earth dams for 1976 = 202.60

The transformed index for a base year of 1975 is

$$\frac{202.60}{189.57} = 1.069.$$

2. The cost estimate to be updated is then multiplied by the transformed index (expressed as a simple ratio). The result is the cost of constructing the updated feature in the current year. For example, the $15,000,000 earth dam above would cost

$$\$15{,}000{,}000 \times 1.069 = \$16{,}035{,}000$$

to construct in 1976.

Modifying Feature Indices

The user can modify the feature indices in Appendix A in two ways for the following reasons: (1) to make them specific to the area in which the project is to be constructed (regionalizing) or (2) to better accommodate a feature which differs from the typical features for which the indices were developed. The methods for both types of modification are described below.

Regionalizing

To regionalize, the user must examine the resource type indices. Generally, only the labor (L) resource types need to be considered, because they vary the most from region to region; however, plant (P) and material (M) indices may also be changed if the user wishes.

In making any modification, the user is cautioned to be aware of the relationships of the four levels in the hierarchy (Figure 1). Each level in the hierarchy is computed from the level(s) below it. Consequently, if a resource type index is changed in regionalizing, the resource class index, the category index, and the feature index may also change, depending on the magnitude of the change made at the resource type level. The change becomes less significant the higher one looks in the hierarchy.

The following four steps are used in making a change:

1. The new index value(s) is (are) substituted for old at the resource type level.

2. New index value(s) is (are) multiplied by the weight(s); the products are summed for all resource types within that resource class to give a new, regionalized resource class index for a category.

3. The new resource class index is substituted for the existing resource class index, multiplied by its

weight, and summed with the other resource class products to give the new category index.

4. The new category index is substituted for the existing category index, multiplied by its weight, and summed with other category products (if any) to give the feature index. Figure 6 shows an example of the procedure for a reservoir at which the user determined that a more appropriate index for laborers would be 220.00

If the user decides to regionalize, it is recommended that the indices for all years be recomputed, since using the system involves comparison of price changes (reflected by index changes) for pairs of years. Deriving a cost change from indices for a year that is regionalized and for another that is not results in a meaningless ratio. At a minimum the indices for the year of the most recent estimate update and the year for which the current update is derived, *must* be changed (regionalized).

Modification Other Than Regionalization

Modifications other than regionalization involve changing the weights in the various levels of the system. This type of change may be required for an atypical feature, such as reservoir for which earthfill and rockfill must be purchased and trucked to the site, with this cost being part of the cost of the reservoir. This type of situation could first change the weighting

Resource Type	1976 Index		Weight in Labor		
Laborer	220.00*	X	55.49	=	122.08**
Operator	206.17	X	12.28	=	25.32
Truck Driver	217.72	X	30.74	=	66.93
Other	217.00	X	1.49	=	3.23
Labor resource class index in earthwork category					217.56**

Resource Class	1976 Index		Weight in Labor		
Labor	217.56	X	73.64	=	160.21**
Plant	203.64	X	24.72	=	50.34
Material	189.17	X	1.64	=	3.10
Earthwork category index for feature reservoirs					213.65**

Category	1976 Index		Weight in Feature		
E	213.65	X	100.00	=	213.65**
C			0.0		
S			0.0		
M			0.0		
L			0.0		
New feature index for reservoirs					213.65**

* Changed value.

** New value resulting from change in resource type index.

Figure 6. Example of regionalizing the reservoir index.

of the material resource types, and second, the weighting of the resource class components. There are two ways of making weighting changes: (1) make appropriate changes to the weights at the resource type level and follow the computations up through the levels to the feature index, or (2) adjust the weighting at the resource class level and proceed up through the levels from there. Figures 7 and 8 present examples of both methods applied to the reservoir feature index.

As for regionalizing, any changes made which result in changed index values must be made for both years under consideration—the year of the original estimate and the year for which the update is required.

Index Projections

The annual budget cycle, which culminates in the presentation of the overall civil works budget to the Office of Management and Budget and Congress, is a highly structured task with critical milestones which must be met in order to properly present and justify the civil works program. The most important aspect of the budget preparation is the development and updating of project cost estimates and benefits. The cost estimates must be updated early enough in the budget cycle to permit an orderly review by Corps Divisions and OCE.

Since the budget data are prepared approximately 6 months before the effective date of the estimate and since the expenditure of regulated funds for a project is about 18 months from the effective date of the cost estimate, 6- and 18-month projections of the feature indices have been prepared. The user is cautioned that these are simple projections and that while the 6-month projections have high reliability, projections beyond 6 months are less reliable.

The projections were prepared using the least squares[6] method applied to the most recent 3 years. The most recent 3 years were used as the sample because they were believed to provide the best reflection of the future. Table 6 shows the least squares equation for each of the 19 features, the coefficient of determination (r^2), and the projected index values for 1976 plus 6 months, 1977 plus 6 months, and 1978 plus 6 months. As for any of the index values, the projection curves in Appendix A may be interpolated to find an index value for interim periods within years.

[6]S. B. Richmond, *Statistical Analysis*, Second Edition (The Ronald Press Company, 1965), p 358.

To use the equation, a value must be substituted for the X term, which represents the year (−1 = 1972, 0 = 1973, 1 = 1974, 2 = 1975, 3 = 1976, 4 = 1977, etc.). The equation gives an index value Y depending on the X year used. Since the equation was developed on the basis of 3 years (1974, 1975, and 1976), the results obtained using the equation for years other than these diminish in accuracy the further the year of interest is from the 1974 to 1976 period. Within-year divisions can be calculated by using fractions for months or quarters (e.g., October 1975 is represented by 2.25, January 1976 by 2.50).

Percentages of Labor, Plant, and Material by Feature

For comparison purposes, the percentages of labor, plant and material in each of the features used in developing the indices were tabulated. Table 7 and Figure 9 present the averages and ranges of these percentages. The indices in Appendix A will have the highest reliability for those projects where the percentages of labor, plant, and material are closest to the sample averages.

7 INTERACTIVE PROGRAM FOR INDEX CALCULATIONS

A research prototype interactive program has been developed to perform the calculations required to change the index values or weights for any of the features. Weights can be changed at resource type, resource class, and category level. Index values can be changed at the resource type level only.

This program could be modified for applications at District or Division level. Figure 10 is an annotated flow diagram of the program. Figure 11 provides examples of output.

8 CONCLUSIONS

This report has described a system of civil works feature cost indices developed for use by Corps civil works Districts in updating cost estimates prior to the official Government estimate for contract award. Each feature index was specifically tailored for that feature by insuring the the resources used in the construction of the feature were identified and weighted appro-

Adjustment to RESOURCE CLASS Index

Resource Type	1976 Index		Weight in Material		
Cement	214.70	X	3.87**	=	8.36
Misc. Metal	210.10	X	.47**	=	.99
Aggregate	162.50	X	60.00*	=	97.50
Steel Plates	209.70	X	4.00**	=	8.39
Other	187.70	X	31.66**	=	59.43
Material resource class index in earthwork category					174.67

*Changed value.

**New changed value resulting from change in aggregate weighting. The change in the aggregate weighting resulted in changes to the weights of the other resource types. It was assumed that the ratio for the remaining resource types remains constant. Since the weights for the types must sum to 100.00, the adjustments were made as follows:

100.00 − 11.90 (existing aggregate weight) = 88.10

100.00 − 60.00 (new aggregate weight) = 40.00

Cement	8.53 X 40/88.10 = 3.87
Misc. Metal	1.04 X 40/88.10 = .47
Steel Plates	8.79 X 40/88.10 = 4.00
Other	69.74 X 40/88.10 = 31.66

Adjustment to CATEGORY INDEX

Resource Type	1976 Index		Weight in Earthwork		
Labor	220.33	X	65.88++	=	145.15
Plant	203.64	X	22.12++	=	45.05
Material	174.67+	X	12.00+	=	20.96
Earthwork category index for feature reservoirs					211.16

+The new resource class index was substituted for the previous value; the material weighting was also increased to reflect an increase in the amount spent on materials.

++New values resulting from change in material weighting. The ratio of resource class weights was adjusted as the resource type weights were.

The resulting feature index for reservoirs = 211.16

Figure 7. Example of changing weights at resource type level (material types only are included).

Resource Class	1976 Index		Weight in Earthwork		
Labor	220.33	X	67.38*	=	148.46
Plant	203.64	X	22.62*	=	46.06
Material	189.17	X	10.00**	=	18.92
Earthwork category index for feature reservoirs					213.44

*New valve.

**Here again, changing the weighting of material required that the weights of labor and plant also be changed.

Figure 8. Example of changing weights at resource class level.

Table 6

Index Projections

	FEATURE	LEAST SQUARES EQUATION	R^2	YEAR+6 MONTHS 1976	1977	1978
03	RESERVOIRS	Y=157.607+20.025X	.9700	227.69	247.77	267.74
04A	EARTH DAMS	Y=148.210+18.730X	.9730	213.77	232.50	251.23
04B	CONCRETE DAMS	Y=145.833+19.215X	.9992	213.09	232.30	251.52
05	LOCKS	Y=151.760+17.315X	.9632	212.36	229.68	246.99
07	POWER PLANTS	Y=144.980+17.435X	.9304	206.00	223.44	240.87
08A	ROADS	Y=149.270+19.180X	.9780	216.40	235.58	254.76
08B	CONCRETE BRIDGES	Y=155.863+17.615X	.9926	217.52	235.13	252.75
08BB	STEEL BRIDGES	Y=155.620+17.555X	.9467	217.06	234.62	252.17
08C	RAILROADS	Y=145.520+21.585X	.9738	221.07	242.65	264.24
09A	CHANNELS+CANALS	Y=140.633+19.105X	.9800	207.50	226.61	245.71
09B	CHANNELS+CANALS	Y=145.220+21.370X	.9800	220.02	241.39	262.76
10	BREAKWATERS+SEAWALLS	Y=140.183+21.250X	.9500	214.56	235.81	257.06
11-1	LEVEES+FLOODWALLS	Y=148.823+18.985X	.9900	215.27	234.26	253.24
11-2	LEVEES+FLOODWALLS	Y=143.093+21.500X	.9736	218.34	239.84	261.34
11-3	LEVEES+FLOODWALLS	Y=155.617+16.805X	.9731	214.43	231.24	248.04
13	PUMPING PLANTS	Y=155.690+16.080X	.9802	211.97	228.05	244.13
15	FLOODWAY CONTROL	Y=155.993+17.015X	.9696	215.55	232.56	249.58
16A	BANK STABILIZATION	Y=149.567+12.405X	.9900	192.98	205.39	217.57
16B	BANK STABILIZATION	Y=141.623+17.795X	.9802	203.91	221.70	239.50
				JAN 1977 X=3.5	JAN 1978 X=4.5	JAN 1979 X=5.5

Table 7

Sample Ranges for Labor, Plant, and Material Classes

	DESCRIPTION	SAMPLE SIZE	LABOR LOW	LABOR AVERAGE	LABOR HIGH	PLANT LOW	PLANT AVERAGE	PLANT HIGH	MATERIAL LOW	MATERIAL AVERAGE	MATERIAL HIGH
03	RESERVOIRS	5	52.95	73.64	83.69	15.28	24.72	43.76	0.01	1.64	8.90
04A	DAMS, EARTH	10	22.93	34.94	48.73	17.26	34.77	56.67	3.78	30.29	53.66
04B	DAMS, CONCRETE	3	34.60	36.77	48.10	11.74	12.18	14.35	37.55	51.06	53.46
05	LOCKS	6	25.74	36.28	52.45	8.64	20.60	36.96	29.91	43.13	53.80
07	POWER PLANT	7	15.80	21.07	25.19	2.82	5.36	14.11	60.70	73.57	81.14
08A	ROADS	6	31.71	44.73	58.50	14.43	31.70	49.43	18.86	23.57	37.84
08B	BRIDGES, CONCRETE	3	19.10	38.59	48.95	12.56	19.52	23.62	27.43	41.88	68.34
08BB	BRIDGES, STEEL	1	.	41.45	.	.	20.70	.	.	37.85	.
08C	RAILROADS	1	.	44.57	.	.	12.48	.	.	42.95	.
09A	CHANNELS+CANALS	2	11.95	29.59	39.18	17.53	42.08	55.41	5.41	28.33	70.52
09B	CHANNELS+CANALS	4	21.03	37.85	53.30	43.96	55.12	68.22	2.74	7.03	11.41
10	BREAKWATERS+ SEAWALLS	3	9.47	23.22	24.11	33.98	65.33	67.59	8.30	11.46	56.55
11-1	LEVEES+FLOODWALLS	2	36.08	36.60	41.71	26.86	52.13	54.75	9.17	11.27	31.43
11-2	LEVEES+FLOODWALLS	2	20.91	21.92	31.40	7.53	58.64	63.19	15.90	19.44	61.07
11-3	LEVEES+FLOODWALLS	3	32.90	34.40	37.19	8.03	21.43	25.61	41.49	44.16	58.80
13	PUMPING PLANTS	6	26.17	33.43	39.82	10.48	12.27	23.91	40.58	54.30	55.37
15	FLOODWAY CONTROL+ DIVERSION STRUCT	3	26.13	36.55	54.90	13.16	15.96	19.86	26.86	47.49	54.00
16A	BANK STABILIZATION	10	18.00	26.91	43.62	14.93	24.66	45.68	10.70	48.43	66.06
16B	BANK STABILIZATION	1	.	32.60	.	.	26.10	.	.	41.30	.

priately. Two actions were taken to insure that the indices were free of such influencing factors as bid climate and seasonality: (1) only Government estimates were used and (2) an adequate sample of estimates was used. The hierarchical buildup of the feature indices provides increasing levels of detail, from the feature to the resource type, making the indices easy to use and understand. This structure also provides flexibility in use of the indices.

The user may choose to use the feature index as presented or to change it based on his knowledge of the particular project being updated. A research prototype interactive computer program has been developed at CERL to perform the many required computations. This program could be the basis for future enhancements to the system which would allow the District user to more easily regionalize the indices or develop indices for atypical projects.

This system will standardize the Corps method of updating survey reports, memoranda, and PB-3 estimates. Additionally, a single detailed source of update data will simplify the Districts' update task and insure higher credibility for the updates.

The indices will be updated periodically (at least yearly) and distributed to all civil works Districts.

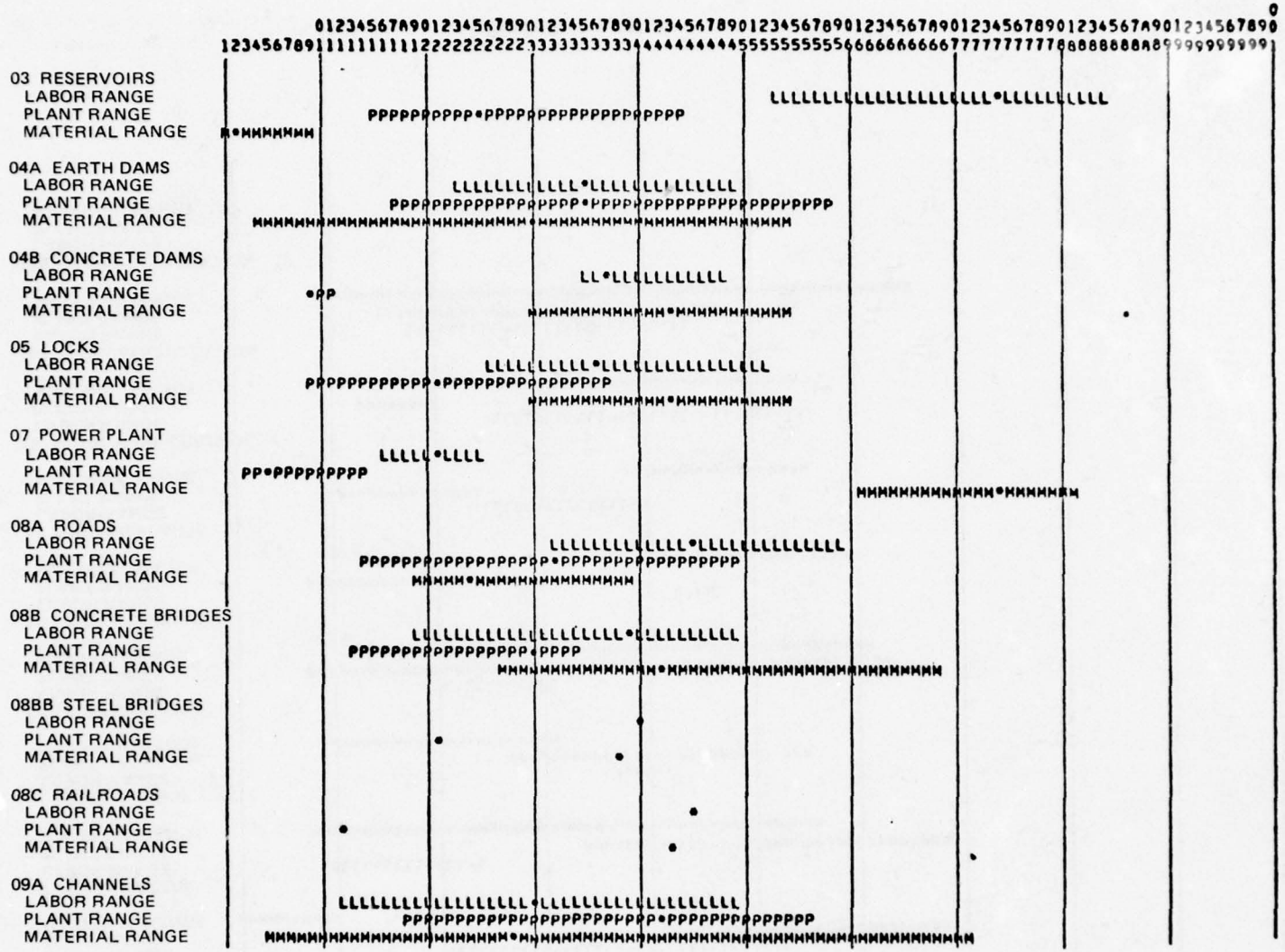

Figure 9. Graphical presentation of labor, plant, and material percentages and ranges.

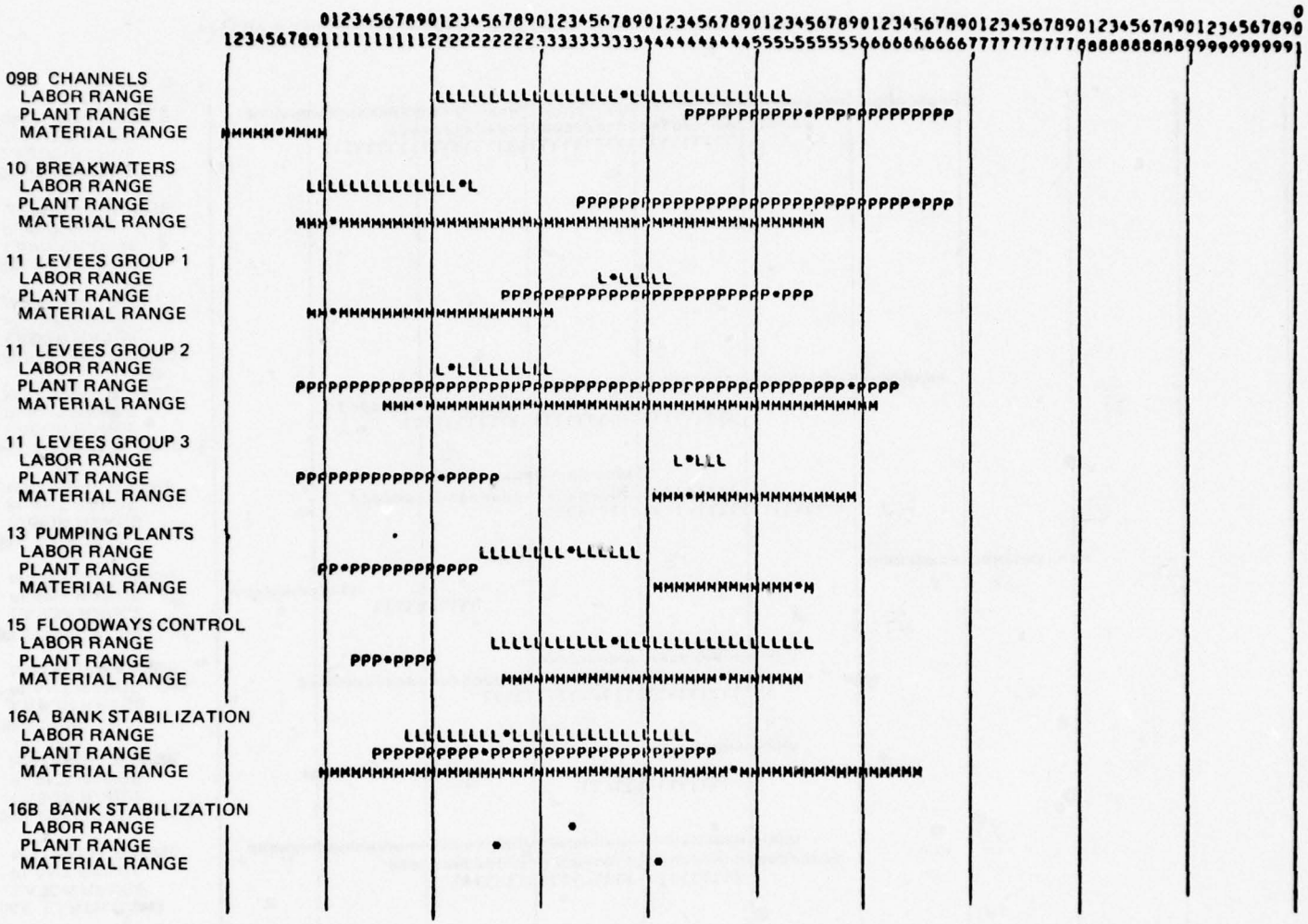

Figure 9. (cont'd).

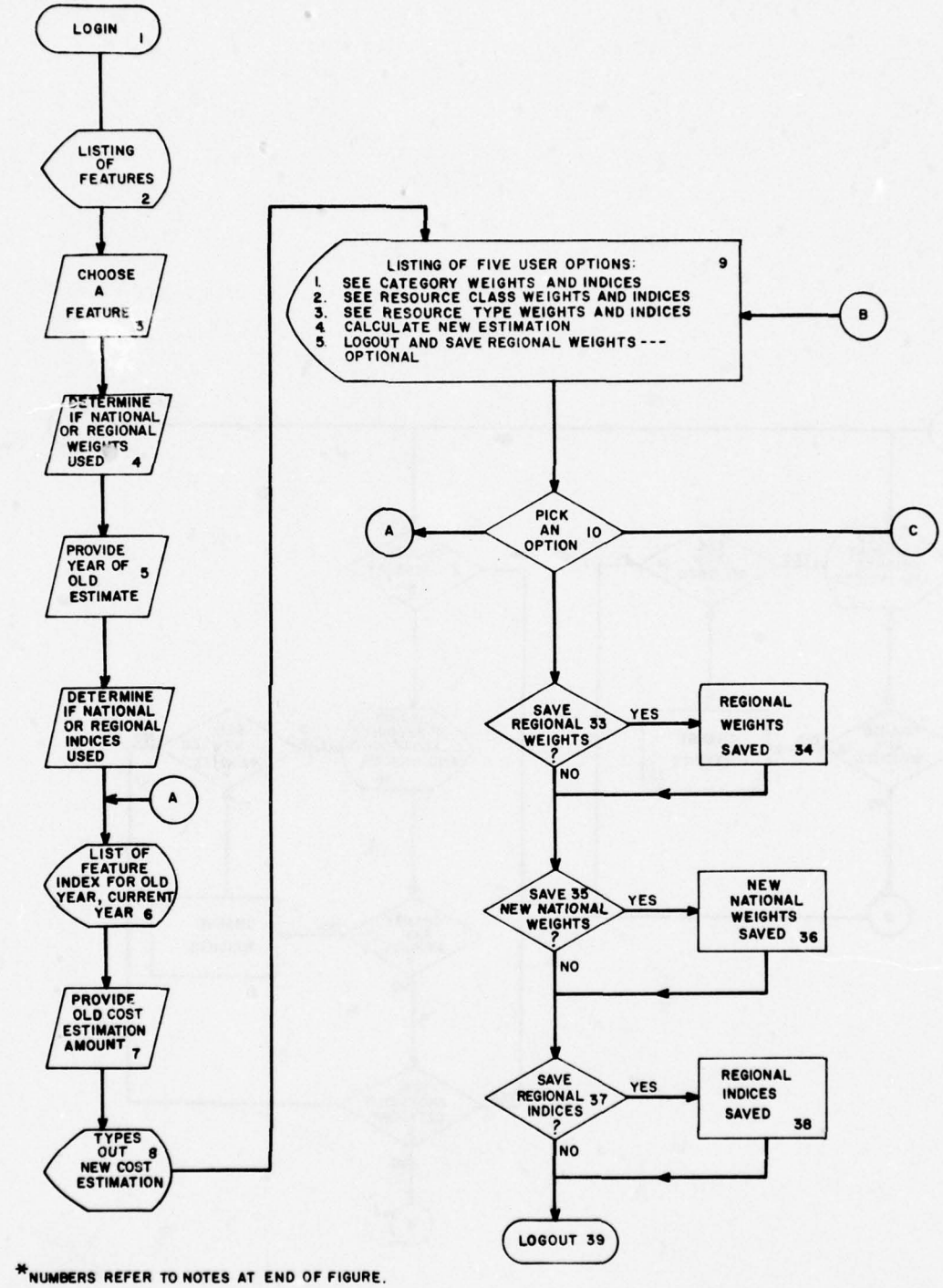

Figure 10. Flow diagram of processes for interactive program.

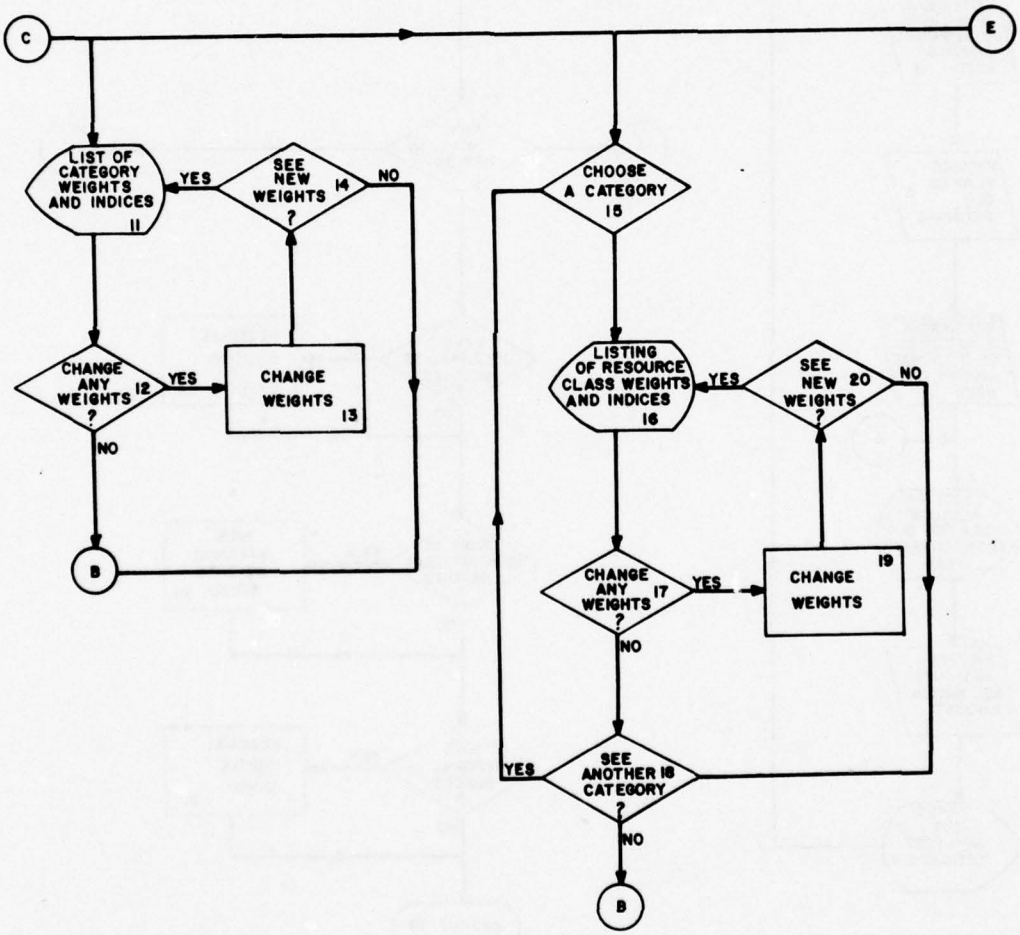

Figure 10. (cont'd).

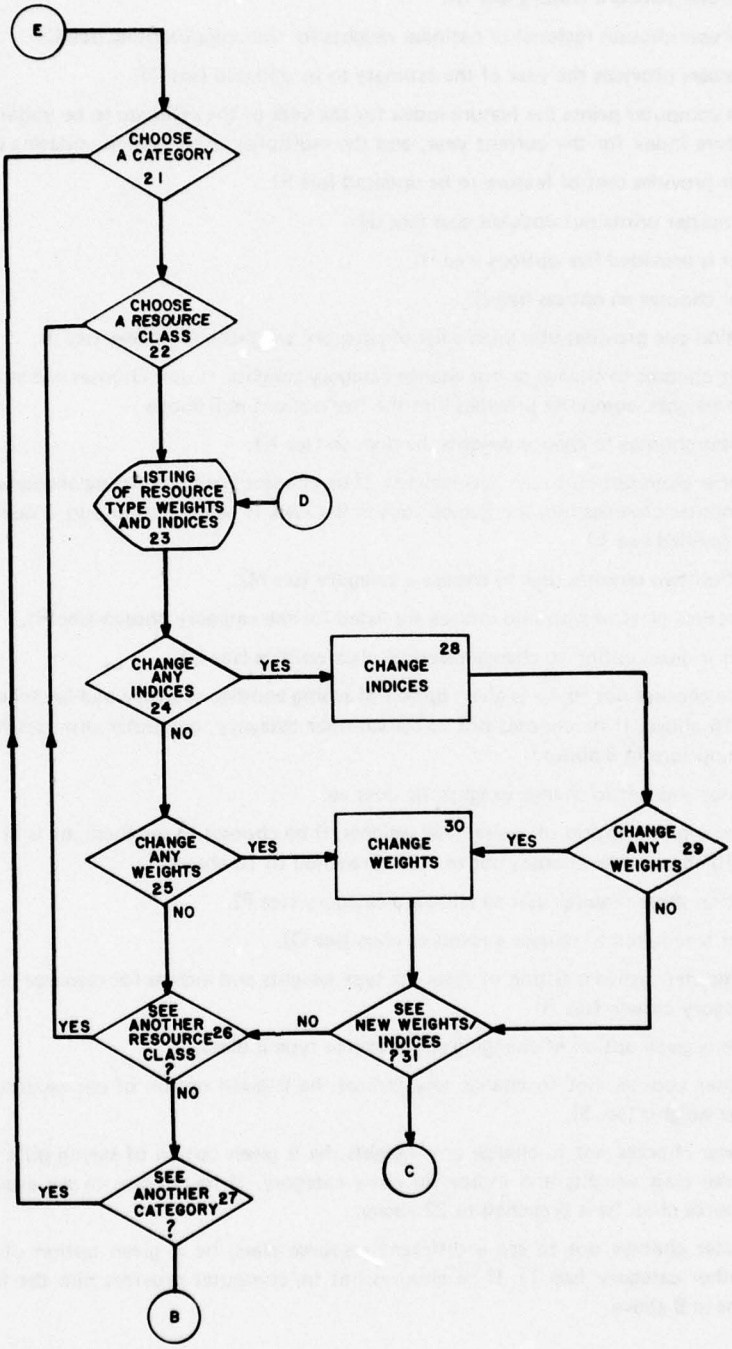

Figure 10. (cont'd).

NOTES:

1. The user logs into the system and calls for the system programs.
2. The computer responds with a listing of features (see A in Figure 11).
3. The user selects a feature (see B).
4. The user chooses regional or national weights for the computations (see C).
5. The user provides the year of the estimate to be updated (see D).
6. The computer prints the feature index for the year of the estimate to be updated, the feature index for the current year, and the multiplier to be used in updating (see E).
7. User provides cost of feature to be updated (see F).
8. Computer prints out updated cost (see G).
9. User is provided five options (see H).
10. User chooses an option (see I).
11. Option one provides user with a list of category weights and indices (see J).
12. User chooses to change or not change category weights. If user chooses not to change any weights, computer provides him the five options in 9 above.
13. If user chooses to change weights, he does so (see K).
14. User is given option to see new weights. If he chooses not to see listing of new weights, computer provides him the five options in 9 above. If he does choose to, a new listing is provided (see L).
15. Option two requires user to choose a category (see M).
16. Resource class weights and indices are listed for the category chosen (see N).
17. User is given option to change resource class weights (see O).
18. If he chooses not to, he is given option of seeing another category and branched back to 15 above. If he chooses not to see another category, computer provides him the five options in 9 above.
19. If user chooses to change weights, he does so.
20. User is given option of seeing new weights. If he chooses to see them, he is branched to 16 above; if he chooses not to, he is branched to 18 above.
21. Option three requires user to choose a category (see P).
22. User is required to choose a resource class (see Q).
23. Computer provides listing of resource type weights and indices for resource class and category chosen (see R).
24. User is given option of changing any resource type indices.
25. If user chooses not to change any indices, he is given option of changing resource type weights (see S).
26. If user chooses not to change any weights, he is given option of seeing different resource class weights and indices in same category. If he chooses to see a different resource class, he is branched to 22 above.
27. If user chooses not to see a different resource class, he is given option of seeing another category (see T). If he chooses not to, computer provides him the five options in 9 above.

Figure 10. (cont'd).

NOTES (cont'd):

28. If in 24 above, user chooses to change resource type indices, he does so.
29. User is given option of also changing resource type weights.
30. If user chose to change weights, he does so.
31. If user chose not to change any resource type weights in 29 above or if user chose to and did change some resource type weights, he is given option of seeing new weights and indices. If he chooses to see these, he is branched to 23 above. If he chooses not to see new weights or indices, he is branched to 26 above.
32. Option 4 branches user to 6 above and provides him the feature index for estimate to be updated, feature index for current year, and multiplier to be used in updating.
33. Option 5 gives user option of saving new regional weights (see U).
34. If he chooses to, new weights are saved permanently (see V).
35. If user chooses not to save regional weights, he is given option of saving new national weights.
36. If he chooses to save new national weights, he does so.
37. If user chooses not to save new national weights, he is given option of saving regional indices.
38. If he chooses to save regional indices, he does so.
39. If user chooses not to save indices or has saved regional indices, he can log out.

Figure 10. (cont'd).

```
WHAT FEATURE TYPE ARE YOU CONCERNED WITH?  TYPE IN REFERENCE NUMBER.
          1        RESERVOIRS (03)
          2        DAMS, EARTH (04)
          3        DAMS, CONCRETE (04)
          4        LOCKS (05)
          5        POWER PLANTS (07)
          6        ROADS, RAILROADS, AND BRIDGES (08)
          7        CHANNELS AND CANALS (09)
          8        BREAKWATERS AND SEAWALLS (10)                        Ⓐ
          9        LEVEES AND FLOODWALLS (11)
         10        PUMPING PLANTS (13)
         11        FLOODWAY CNTRL AND DIVSN STRUCTURES (15)
         12        BANK STABILIZATION (16)
         13        BEACH REPLENISHMENT (17)
 PF CYCLE NO.      = 001
 PF CYCLE NO.      = 001
 PF CYCLE NO.      = 022
      CM LWA+1 = 30060B, LOADER USED  42000B0②Ⓑ
WILL YOU USE REGIONAL WEIGHTS OR NATIONAL WEIGHTS?
REGIONAL=1.  NATIONAL=2.  ②Ⓒ
WHAT YEAR WAS THE ESTIMATION TO BE UPDATED MADE?  1975 - Ⓓ
WILL YOU USE REGIONAL INDICES OR NATIONAL INDICES?
NATIONAL=1.  NATIONAL=2.  1
NO REGIONAL INDICES EXIST FOR THIS YEAR.  NATIONAL INDICES WILL BE USED INSTEAD.
THE INDEX IS 189.37 FOR THE YEAR 1975.
THE INDEX IS 202.58 FOR THE CURRENT YEAR.                               Ⓔ
THE MULTIPLIER IS   1.0697.
WHAT IS THE OLD ESTIMATION?5555. Ⓕ
THE NEW ESTIMATION IS $            6000. Ⓖ
WHAT DO YOU WANT TO DO?  TYPE IN REF NUMBER.
   1  LOOK AT CATEGORY WEIGHTS AND INDICES
   2  LOOK AT RESOURCE CLASS WEIGHTS AND INDICES
   3  LOOK AT THE RESOURCE TYPE WEIGHTS AND INDICES                     Ⓗ
   4  CALCULATE NEW ESTIMATE FIGURE
   5  LOGOUT AND SAVE REGIONAL WEIGHT–OPTIONAL------③ Ⓘ

THE FOLLOWING CHART GIVES THE CATEGORY WEIGHTS AND INDICES USED TO DETERMINE
  THE FEATURE INDICES:                                                  Ⓙ
```

	CATEGORY	WEIGHTS	1970 INDICES	CURRENT INDICES	6 MONTH PROJCTN	18 MONTH PROJCTN
1	EARTH	9.83	120.46	204.78		
2	CONCR	72.72	119.36	202.74		
3	STEEL	11.27	115.97	200.96		
4	MECHL	4.40	121.31	207.22		
5	ELECL	1.63	427.93	732.20		
6	BUILD	.15	125.36	214.94		

Figure 11. Example output of interactive program.

```
WEIGHTED INDICES:   11.84   86.80   13.07   5.34   6.98   .19   0.00
WILL ANY WEIGHTS BE CHANGED?
YES=1.  NO=2.(1)(K)
HOW MANY WEIGHTS WILL BE CHANGED?6
CATEGORY TO BE CHANGED?  TYPE THE REF NUMBER.1
THE NEW VALUE?11.3
CATEGORY TO BE CHANGED?  TYPE THE REF NUMBER.2
THE NEW VALUE?68.62
CATEGORY TO BE CHANGED?  TYPE THE REF NUMBER.3
THE NEW VALUE?12.95
CATEGORY TO BE CHANGED?  TYPE THE REF NUMBER.4
THE NEW VALUE?5.08
CATEGORY TO BE CHANGED?  TYPE THE REF NUMBER.5
THE NEW VALUE?1.88
CATEGORY TO BE CHANGED?  TYPE THE REF NUMBER.6
THE NEW VALUE?.17

DO YOU WANT TO SEE THE NEW CATEGORY WEIGHTS?  YES=1.  NO=2.(1)
```

	CATEGORY	WEIGHTS	1970 INDICES	CURRENT INDICES	6 MONTH PROJCTN	18 MONTH PROJCTN
1	EARTH	11.30	120.46	204.78		
2	CONCR	68.62	119.36	202.74		
3	STEEL	12.95	115.97	200.96		
4	MECHL	5.08	121.31	207.22		
5	ELECL	1.88	427.93	732.20		
6	BUILD	.17	125.36	214.94		

(L)

```
DO YOU WANT TO INSPECT A RESOURCE CLASS OF A DIFFERENT CATEGORY?  YES=1.
  NO=2.2

WHAT DO YOU WANT TO DO?  TYPE IN REF NUMBER.
   1  LOOK AT CATEGORY WEIGHTS AND INDICES
   2  LOOK AT RESOURCE CLASS WEIGHTS AND INDICES
   3  LOOK AT THE RESOURCE TYPE WEIGHTS AND INDICES
   4  CALCULATE NEW ESTIMATE FIGURE
   5  LOGOUT AND SAVE REGIONAL WEIGHTS–OPTIONAL–2

WHICH CATEGORY DO YOU WANT TO SEE?  EARTH=1.  CONCR=2.  STEEL=3.  MECHL=4.
  ELEC=5.  BUILD=6.(1) – (M)
CATEGORY=1.
```

	RESOURCE CLASS	WEIGHTS	1968 INDICES	CURRENT INDICES
1	PLANT	31.08	106.22	203.88
2	LABOR	67.55	106.17	216.19
3	MATRL	1.37	105.60	187.70

(N)

Figure 11 (cont'd).

```
WEIGHTED INDICES;    33.01    71.72    1.45
DO YOU WANT TO CHANGE ANY WEIGHTS?    YES=1.    NO=2.(2) - (O)
DO YOU WANT TO SEE ANOTHER CATEGORY?    YES=1.    NO=2.2
WHICH CATEGORY ARE YOU INTERESTED WITH?    EARTH=1.    CONCR=2.    STEEL=3.
  MECHL=4.    ELECL=5.    BUILD=6.(1) - (P)
WHICH RESOURCE CLASS OF THAT CATEGORY?    PLANT=1.    LABOR=2.    MATERIAL=3.
(2) - (Q)

CATEGORY=1
RESOURCE CLASS=2
```

	RESOURCE TYPE	WEIGHTS	1968 INDICES	CURRENT INDICES
1	CARPENTERS	0.00	105.68	216.00
2	CEMENT MASONS/ FINISHERS	.13	104.95	211.00
3	ELECTRICIANS	0.00	106.25	213.00
4	IRON WORKERS	0.00	106.31	216.00
5	LABORERS	47.13	106.49	225.00
6	OPERATING ENGRS.	42.28	105.61	206.17
7	PAINTERS	0.00	106.31	218.11
8	PLUMBERS/PIPE FITTERS	0.00	106.96	216.00
9	TRUCKDRIVERS	.89	108.86	217.72
10	OTHER	9.57	106.80	217.00

(R)

```
WEIGHTED INDICES-1 THRU 6:    0.00    .14    0.00    0.00    50.19    44.65
WEIGHTED INDICES-7 THRU 12:    0.00    0.00    .97    10.22    0.00    0.00
DO YOU WANT TO CHANGE ANY WEIGHTS?    YES=1.    NO=2.(2) - (S)
DO YOU WANT TO SEE WEIGHTS FOR ANOTHER CLASS FOR THE SAME CATEGORY?
YES=1.    NO=2.(2) - (T)

WHAT DO YOU WANT TO DO?  TYPE IN REF NUMBER.
  1  LOOK AT CATEGORY WEIGHTS AND INDICES
  2  LOOK AT RESOURCE CLASS WEIGHTS AND INDICES
  3  LOOK AT THE RESOURCE TYPE WEIGHTS AND INDICES
  4  CALCULATE NEW ESTIMATE FIGURES
  5  LOGOUT AND SAVE REGIONAL WEIGHTS-OPTIONAL-(5)-(U)
DO YOU WANT TO SAVE THE NEW REGIONAL WEIGHTS?    YES=1.    NO=2.2
DO YOU WANT TO SAVE THE NEW NATIONAL WEIGHTS?    YES=1    NO=21
NEW NATIONAL WEIGHTS SAVED -(V)
DO YOU WANT TO SAVE THE NEW INDICES?    YES=1    NO=22
    STOP
```

Figure 11 (cont'd).

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APPENDIX A: FEATURE INDICES

This appendix presents the indices developed in this study arranged by ascending feature cost account number. Each feature is presented in four pages. The first page provides the feature index for the current and previous 9 calendar years, as well as category indices for the same years and the weighting of each category for that feature (Figure A1). The second page provides resource class indices and the resource class weights in each category (Figure A2). The third page provides resource type indices and their weights within the resource class (Figure A3). The fourth page is a graphical presentation of the feature index (Figure A4).

The graphs also show index projections through 1978 plus 6 months and the ENR Construction Cost Index (for comparison purposes). Interpolation between data points is possible by taking each data point as the value in July of that year.

Each level in the hierarchy depends on the sum of products in the levels below it, culminating at the highest level with the feature index. The computations are not shown for each feature, but are illustrated in the example shown in Figure A5.

Table A1 summarizes all the feature indices.

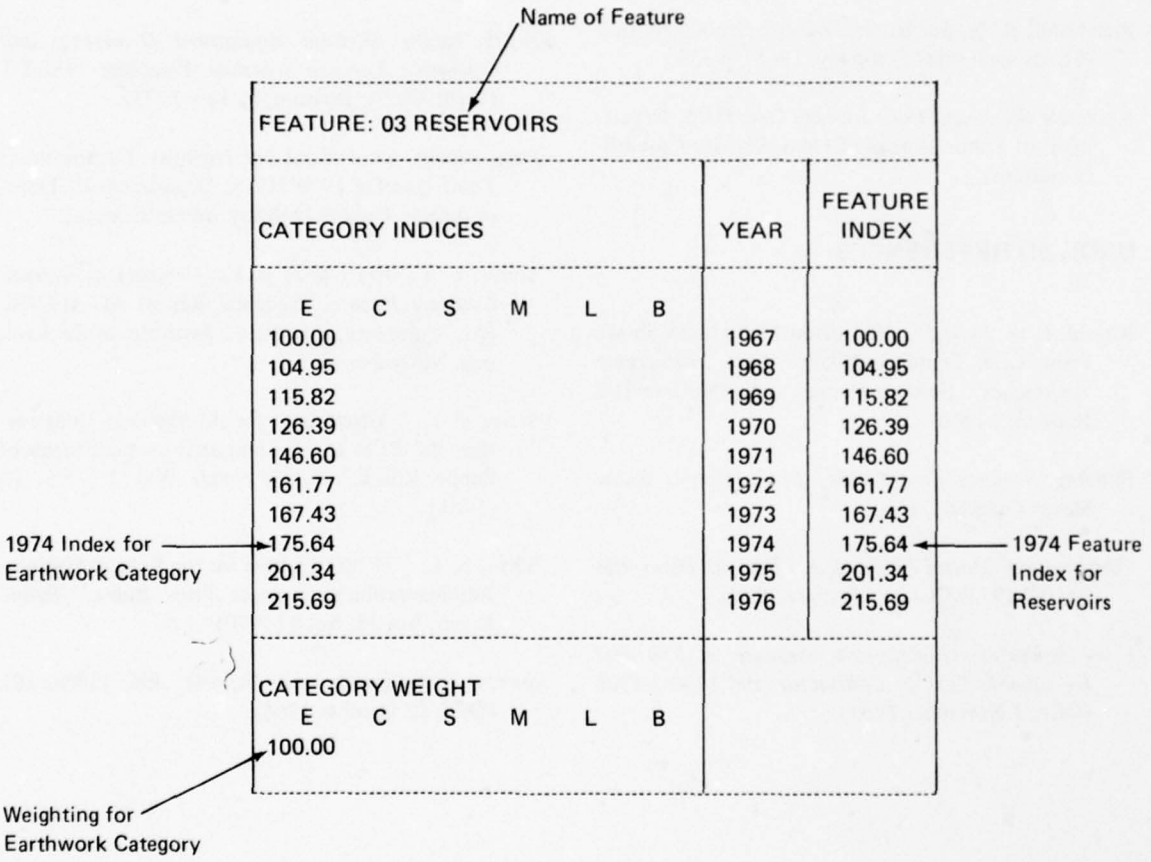


Figure A1. First page of feature presentation.

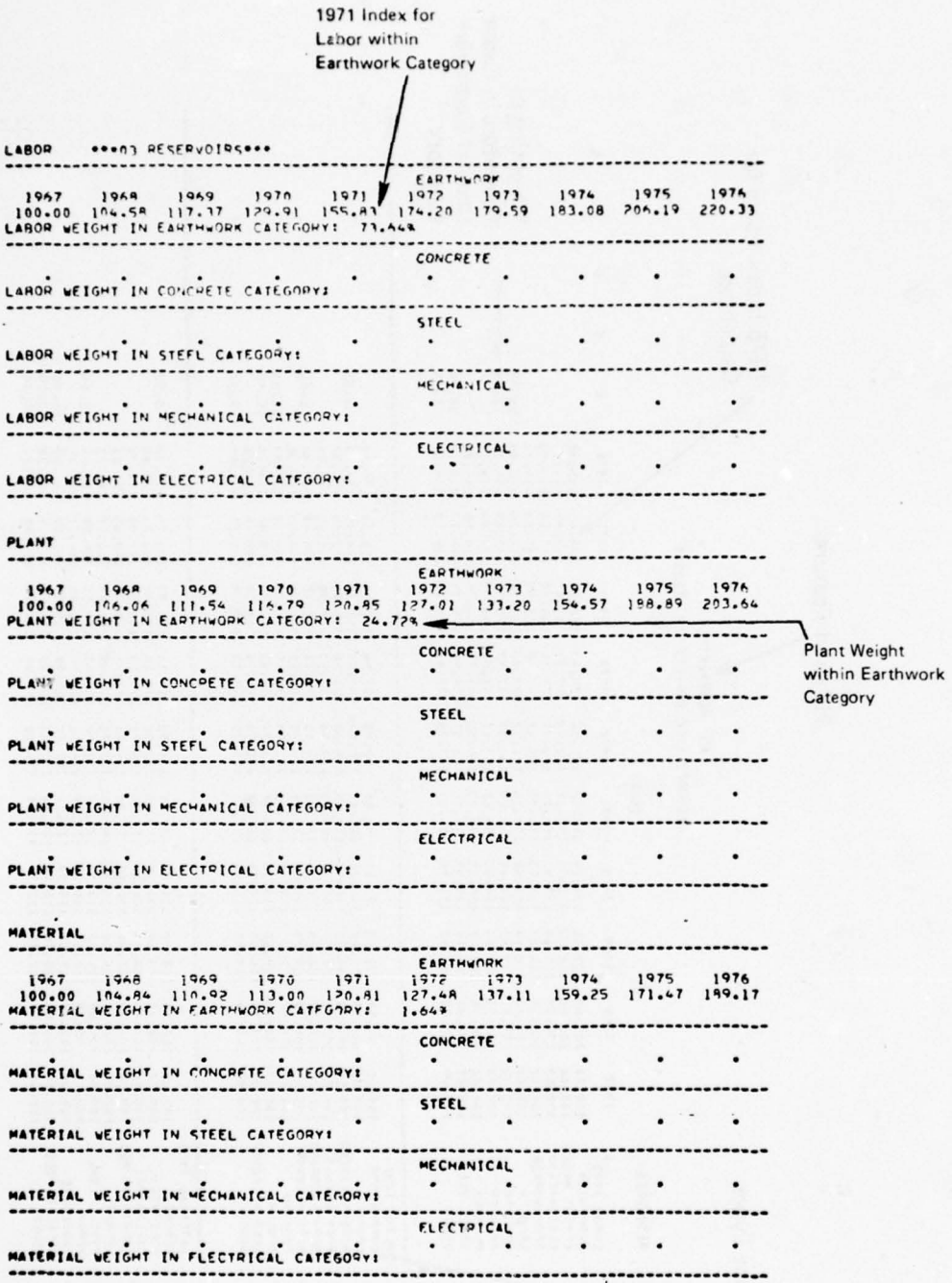
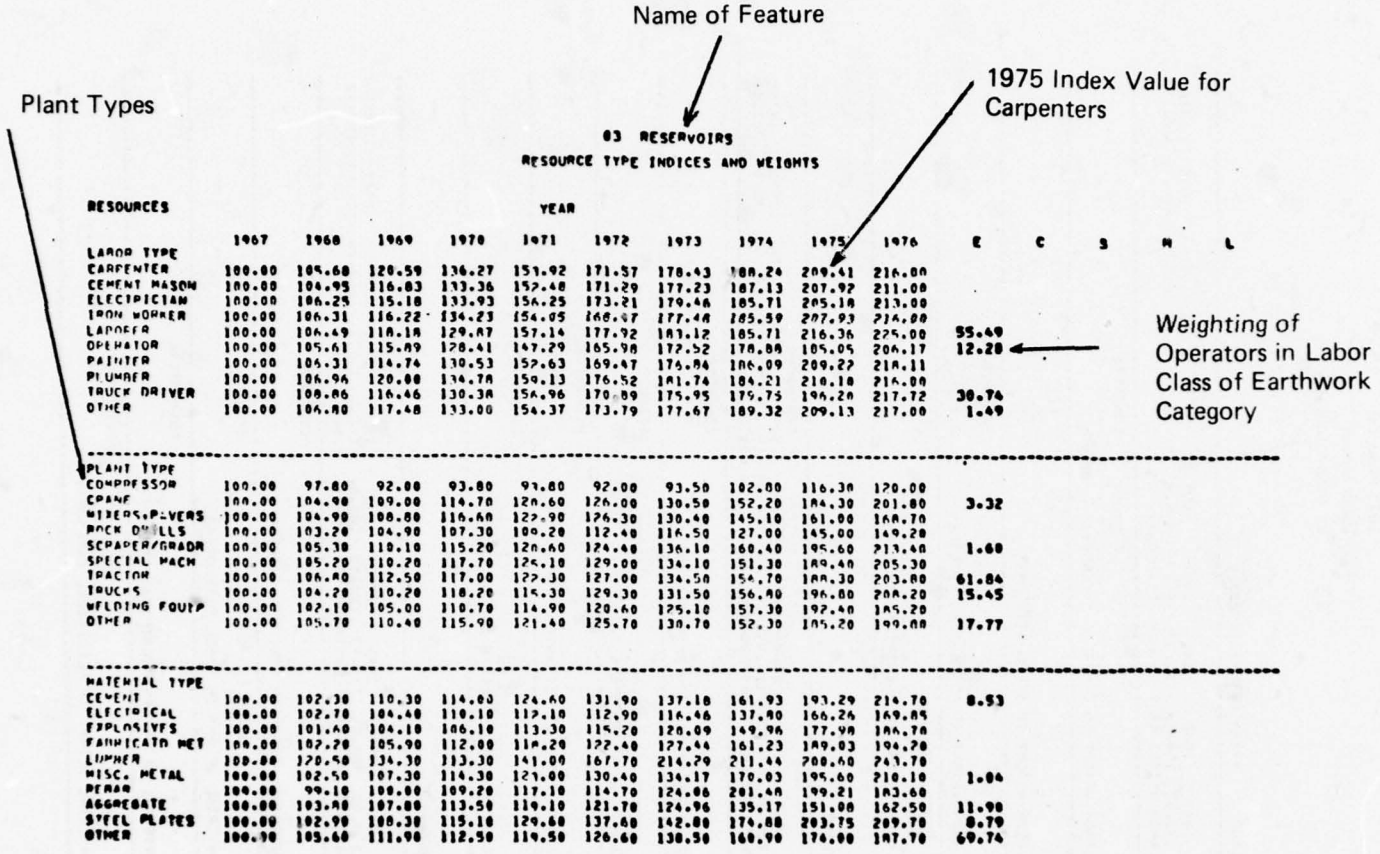


Figure A2. Second page of feature presentation.



03 RESERVOIRS

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.60	120.50	136.27	151.92	171.57	178.43	188.24	209.41	216.00					
CEMENT MASON	100.00	104.95	116.03	133.36	152.48	171.29	177.23	187.13	207.92	211.00					
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	214.00					
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	55.49				
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	208.17	12.28				
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.18	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	154.96	170.89	175.95	179.75	196.20	217.72	30.74				
OTHER	100.00	104.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	1.49				
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.80	93.80	93.80	92.00	93.50	102.80	116.30	120.00					
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	3.32				
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	1.60				
SPECIAL MACH	100.00	105.20	110.20	117.70	126.10	129.00	134.10	151.30	189.40	205.30					
TRACTOR	100.00	106.40	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	61.84				
TRUCKS	100.00	104.20	110.20	118.20	114.30	129.30	131.50	156.40	196.80	208.20	15.45				
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20					
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.00	17.77				
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.60	124.60	131.90	137.10	161.93	193.29	214.70	8.53				
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.90	166.24	169.85					
EXPLOSIVES	100.00	101.40	104.10	106.10	113.30	115.20	120.09	149.96	177.98	184.70					
FABRICATD MET	100.00	107.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20					
LUMBER	100.00	120.40	134.30	113.30	141.00	167.70	214.29	211.44	208.40	243.70					
MISC. METAL	100.00	102.50	107.30	114.30	121.00	130.40	134.17	170.03	195.60	210.10	1.04				
PERAM	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.40	199.21	183.60					
AGGREGATE	100.00	103.40	107.00	113.50	119.10	121.70	124.96	135.17	151.00	162.50	11.90				
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.80	203.75	209.70	0.79				
OTHER	100.90	105.60	111.90	112.50	119.50	126.60	130.50	160.90	174.00	187.70	69.74				

Figure A3. Third page of feature presentation.

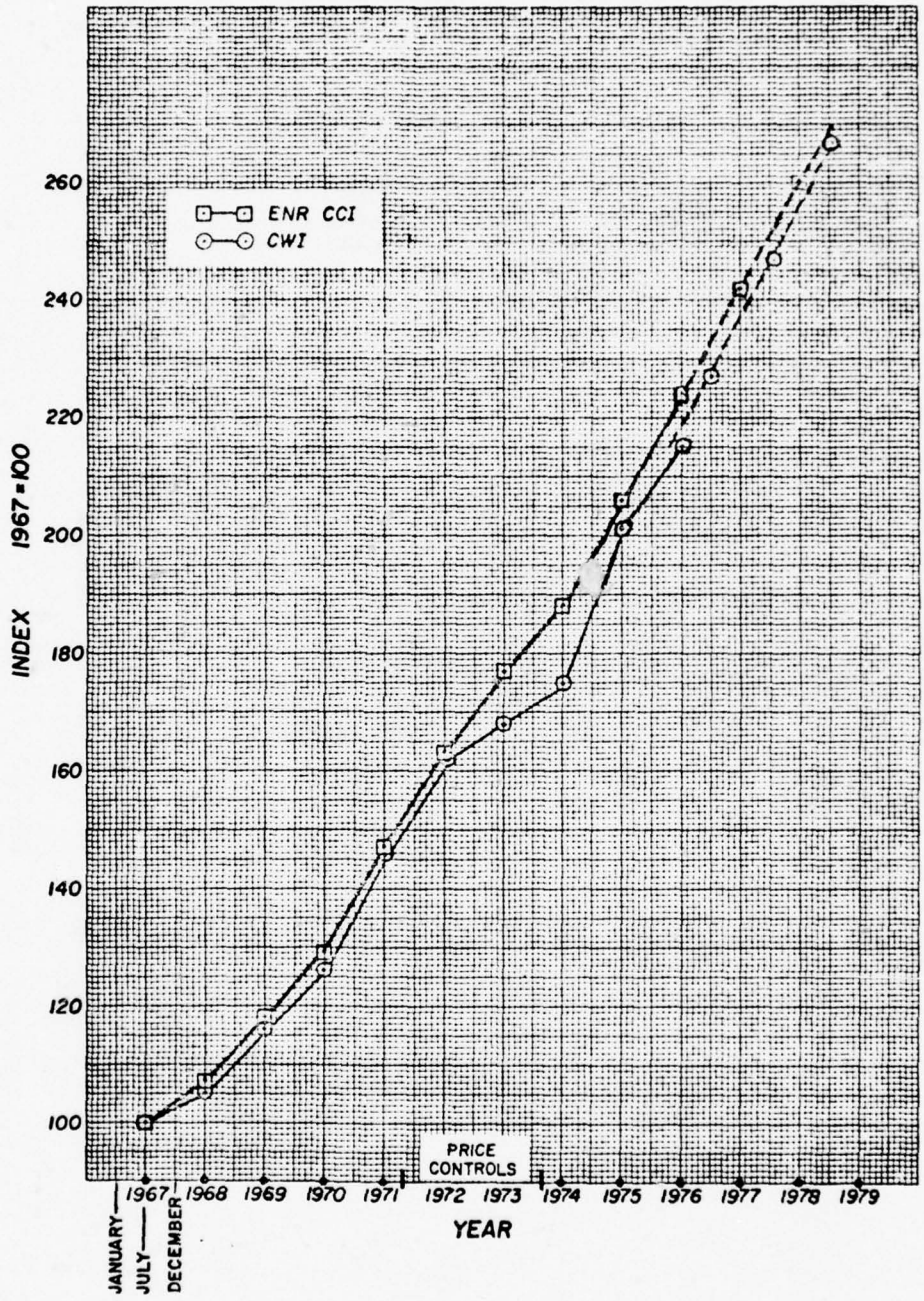


Figure A4. Fourth page of feature presentation.

For reservoirs, the third sheet provides index values for each resource type for 1967 through 1976 and the weights for each type by resource class within each category.

The labor resource class index for the earthwork (E) category for 1976 is computed as follows:

Resource Type	1976 Index		Weight in Labor		
Laborer	225.00	X	55.49	=	124.85
Operator	206.17	X	12.28	=	25.32
Truck Driver	217.72	X	30.74	=	66.93
Other	217.00	X	1.49	=	3.23
Labor resource class index in earthwork category				=	220.33

The earthwork category index for the feature reservoirs for 1976 is computed as follows:

Resource Class	1976 Index		Weight in Earthwork		
Labor	220.33	X	73.64	=	162.25
Plant	203.64	X	24.72	=	50.34
Material	189.17	X	1.64	=	3.10
Earthwork category index for feature reservoirs				=	215.69

The feature index for reservoirs is computed as follows:

Category	1976 Index		Weight in Feature		
Earthwork	215.69	X	100.00	=	215.69
Concrete			0.0		
Steel			0.0		
Mechanical			0.0		
Electrical			0.0		
Feature index for reservoirs				=	215.69

Figure A5. Example calculation of feature index.

Table A1

Summary of Feature Indices

FEATURE		YEAR									
		1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
03	RESERVOIRS	100.00	104.95	115.82	126.39	146.60	161.77	167.43	175.64	201.34	215.69
04A	DAMS, EARTH	100.00	104.83	111.51	119.67	130.77	140.58	147.39	165.14	189.27	202.60
04B	DAMS, CONCRETE	100.00	105.14	112.90	122.64	133.26	144.57	151.43	165.37	183.62	203.80
05	LOCKS	100.00	104.91	111.93	119.92	132.69	143.03	150.04	167.12	190.30	201.75
07	POWER PLANTS	100.00	104.79	111.26	119.72	128.54	135.78	141.26	159.74	185.20	194.61
08A	ROADS	100.00	105.67	112.39	113.61	134.85	147.01	153.84	166.79	190.95	205.15
08B	BRIDGES, CONCRETE	100.00	105.31	113.14	120.38	134.76	146.27	155.03	172.60	192.85	207.83
08BB	BRIDGES, STEEL	100.00	104.47	111.19	119.66	131.08	141.64	147.78	170.77	195.54	205.88
08C	RAILROADS	100.00	106.63	114.43	121.45	138.09	151.07	158.74	159.06	192.78	208.23
09A	CHANNELS+CANALS	100.00	105.32	111.72	119.76	132.74	138.61	143.41	158.32	181.68	196.53
09B	CHANNELS+CANALS	100.00	105.54	112.59	121.25	131.82	143.63	149.00	164.96	191.23	207.70
10	BREAKWATERS+ SEAWALLS	100.00	104.83	111.42	118.88	127.05	136.29	141.06	158.76	188.03	201.26
11-1	LEVEES+FLOODWALLS	100.00	106.12	113.34	123.12	136.97	149.55	154.85	167.00	188.41	204.97
11-2	LEVEES+FLOODWALLS	100.00	105.14	111.63	118.74	127.48	137.06	142.97	162.55	190.18	205.55
11-3	LEVEES+FLOODWALLS	100.00	104.67	111.52	120.22	132.44	145.01	150.11	170.81	192.45	204.42
13	PUMPING PLANTS	100.00	104.83	112.17	119.75	131.73	141.94	149.36	170.45	190.49	202.61
15	FLOODWAY CONTROL+ DIVERSION STRUCT	100.00	104.72	112.28	120.22	132.70	143.52	150.83	171.27	193.50	205.30
16A	BANK STABILIZATION	100.00	104.99	110.91	118.50	126.54	136.43	140.85	162.60	173.12	187.41
16B	BANK STABILIZATION	100.00	105.17	111.90	119.23	131.04	140.36	145.66	157.96	180.13	193.55

FEATURE: 03 RESERVOIRS

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00						1967	100.00
104.95						1968	104.95
115.82						1969	115.82
126.39						1970	126.39
146.60						1971	146.60
161.77						1972	161.77
167.43						1973	167.43
175.64						1974	175.64
201.34						1975	201.34
215.69						1976	215.69

CATEGORY WEIGHT					
E	C	S	M	L	B
100.00					

LABOR ***03 RESERVOIRS***

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.58	117.17	129.91	155.83	174.20	179.59	183.08	208.19	220.33

LABOR WEIGHT IN EARTHWORK CATEGORY: 73.44%

CONCRETE

LABOR WEIGHT IN CONCRETE CATEGORY:

STEEL

LABOR WEIGHT IN STEEL CATEGORY:

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATEGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.06	111.54	116.79	120.85	127.01	133.20	154.57	188.89	203.64

PLANT WEIGHT IN EARTHWORK CATEGORY: 24.72%

CONCRETE

PLANT WEIGHT IN CONCRETE CATEGORY:

STEEL

PLANT WEIGHT IN STEEL CATEGORY:

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATEGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.84	110.92	113.00	120.81	127.48	137.11	159.25	171.47	199.17

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 1.84%

CONCRETE

MATERIAL WEIGHT IN CONCRETE CATEGORY:

STEEL

MATERIAL WEIGHT IN STEEL CATEGORY:

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATEGORY:

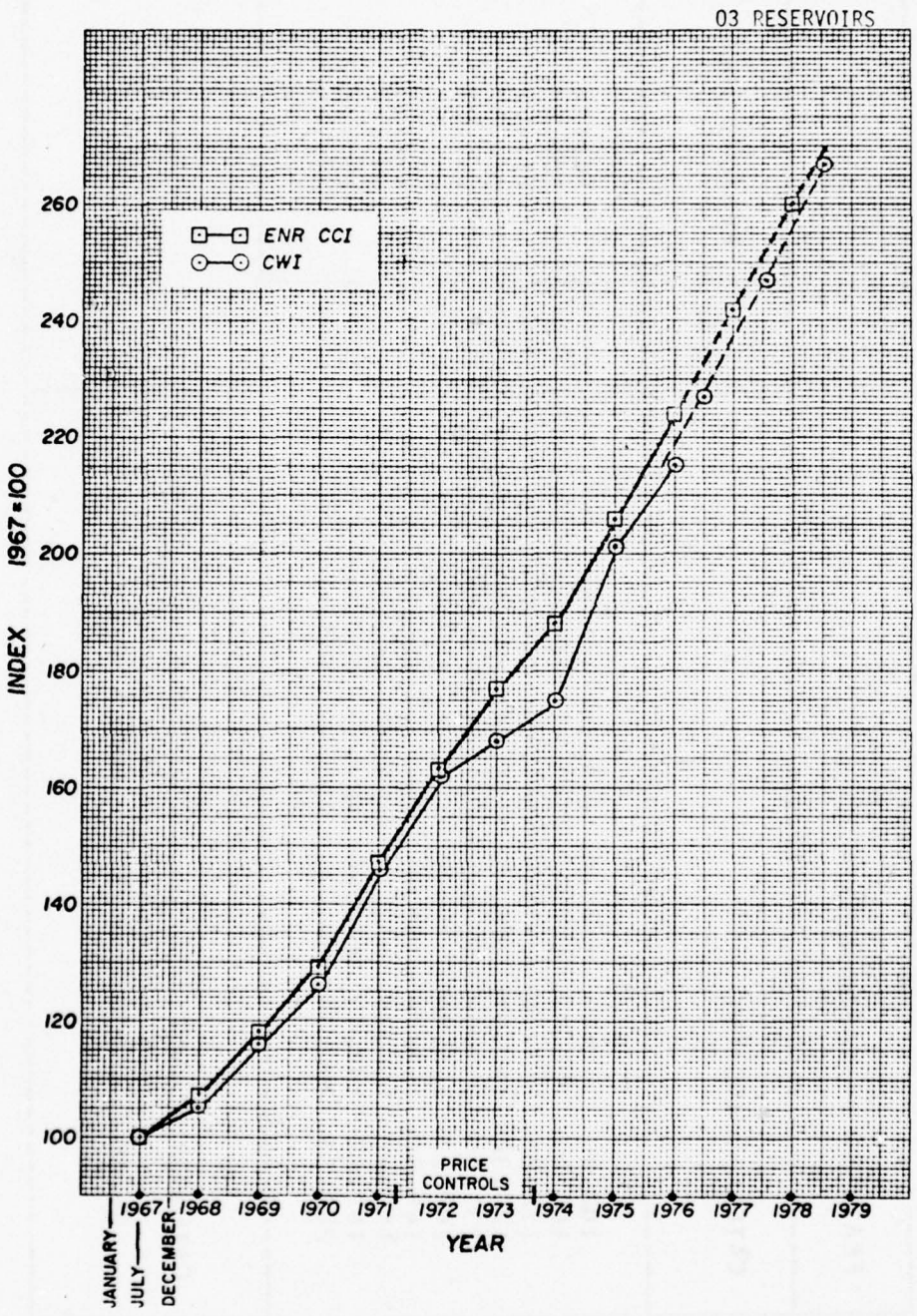
ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATEGORY:

03 RESERVOIRS

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00					
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00					
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00					
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	55.49				
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	12.28				
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	154.96	170.89	175.95	179.75	196.20	217.72	30.74				
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	1.49				
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00					
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	3.32				
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	1.60				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30					
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	61.84				
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	15.45				
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20					
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	17.77				
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70	8.53				
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20					
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70					
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	1.04				
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60					
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	11.90				
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70	8.79				
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	69.74				


03 RESERVOIRS
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
JANUARY
JULY
DECEMBER
YEAR

FEATURE: 04 EARTH DAMS A

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00	100.00	100.00	100.00	1967	100.00
105.41	104.84	102.83	103.83	104.11	107.29	1968	104.83
112.25	113.30	107.79	109.86	110.24	117.56	1969	111.51
120.38	121.07	116.51	116.48	122.17	124.40	1970	119.67
131.46	134.85	126.53	123.85	134.44	141.07	1971	130.77
142.18	146.26	132.90	128.58	143.82	155.95	1972	140.58
149.51	152.78	142.21	134.21	148.87	169.35	1973	147.39
163.47	166.74	172.88	155.87	163.14	179.17	1974	165.14
187.67	190.19	194.84	189.83	187.04	194.35	1975	189.27
203.23	204.54	199.34	203.05	193.60	212.05	1976	202.60

CATEGORY WEIGHT

E	C	S	M	L	B
64.38	13.08	16.81	4.40	1.23	.09

*** 04A EARTH DAMS

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.53	116.48	123.55	151.45	170.13	176.14	181.51	195.34	213.21

LABOR WEIGHT IN EARTHWORK CATEGORY: 14.72%

CONCRETE

100.00	104.15	113.25	132.11	154.19	172.65	178.93	186.38	207.50	217.69

LABOR WEIGHT IN CONCRETE CATEGORY: 40.14%

STEEL

100.00	106.33	114.75	132.91	154.15	170.34	178.15	185.04	207.28	216.77

LABOR WEIGHT IN STEEL CATEGORY: 21.64%

MECHANICAL

100.00	106.51	117.40	132.33	155.31	172.54	179.20	186.51	207.27	217.13

LABOR WEIGHT IN MECHANICAL CATEGORY: 4.71%

ELECTRICAL

100.00	105.71	115.23	133.45	156.20	173.19	179.44	185.83	205.44	213.28

LABOR WEIGHT IN ELECTRICAL CATEGORY: 19.21%

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.91	109.63	115.10	113.66	124.62	131.22	162.73	186.83	201.39

PLANT WEIGHT IN EARTHWORK CATEGORY: 44.97%

CONCRETE

100.00	103.64	107.35	113.48	117.34	122.43	126.85	146.38	175.62	188.23

PLANT WEIGHT IN CONCRETE CATEGORY: 16.83%

STEEL

100.00	104.43	108.43	114.19	117.94	124.44	128.67	151.19	183.85	196.73

PLANT WEIGHT IN STEEL CATEGORY: 4.37%

MECHANICAL

100.00	105.16	110.09	117.36	124.07	128.57	133.48	151.68	189.05	204.82

PLANT WEIGHT IN MECHANICAL CATEGORY: 6.55%

ELECTRICAL

100.00	105.19	110.31	116.62	113.38	126.70	130.96	153.78	189.01	202.61

PLANT WEIGHT IN ELECTRICAL CATEGORY: 4.24%

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.94	108.60	112.48	119.25	123.77	130.00	149.26	166.99	178.90

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 12.21%

CONCRETE

100.00	104.09	110.37	113.71	123.69	130.93	134.08	157.13	179.73	194.54

MATERIAL WEIGHT IN CONCRETE CATEGORY: 42.79%

STEEL

100.00	101.73	105.13	111.44	119.45	122.42	132.48	171.40	191.85	194.37

MATERIAL WEIGHT IN STEEL CATEGORY: 23.45%

MECHANICAL

100.00	103.44	109.07	116.77	120.59	124.08	129.64	153.25	188.10	201.46

MATERIAL WEIGHT IN MECHANICAL CATEGORY: 96.74%

ELECTRICAL

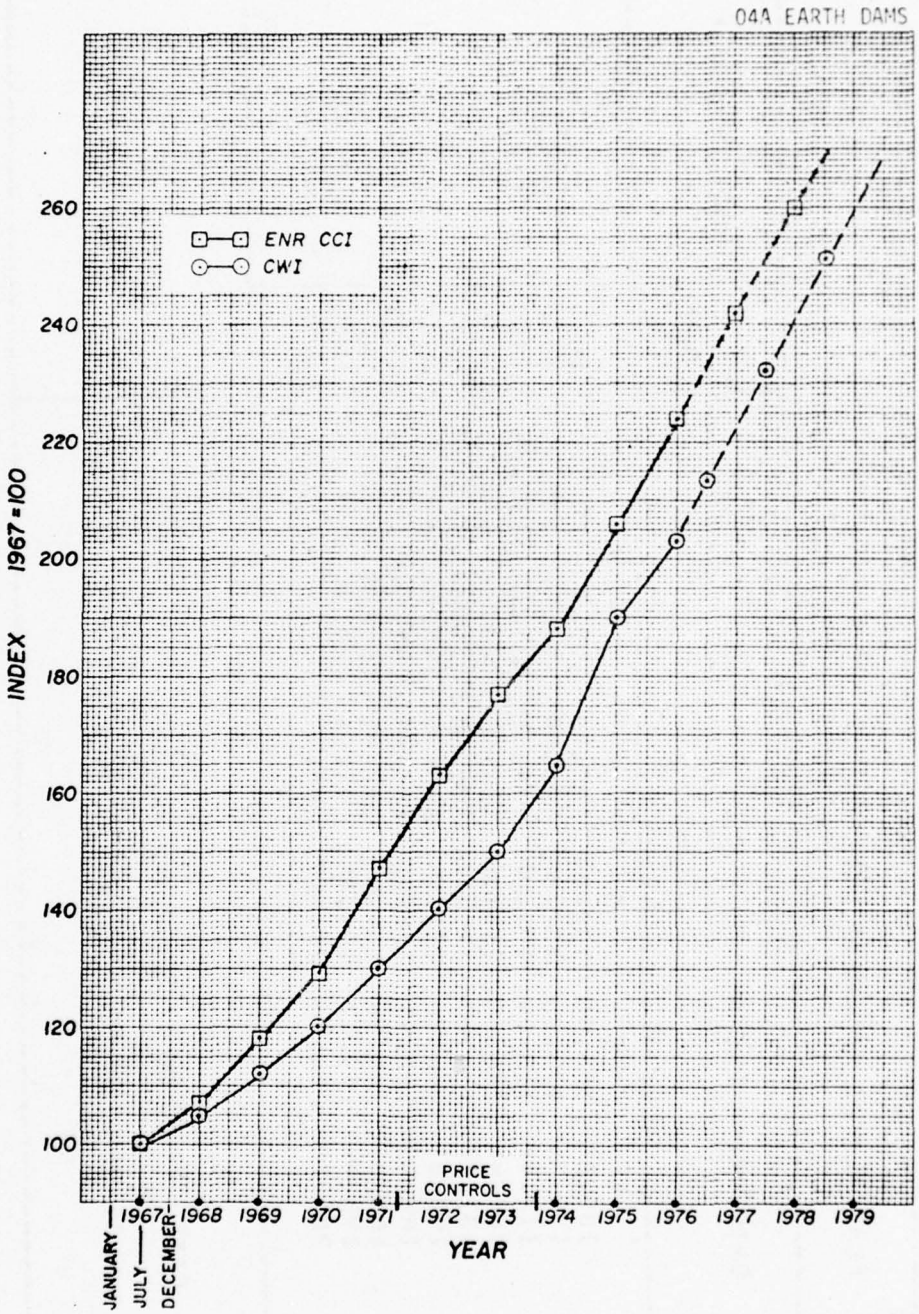
100.00	103.84	104.90	110.34	113.81	114.24	114.20	139.99	167.42	171.97

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: 46.55%

04 EARTH DAMS A

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00		29.02	2.10	1.06	
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		9.17			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00				5.21	95.50
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00	1.12	2.06	64.70	32.63	
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	23.89	34.55	17.62	26.33	1.18
OPERATOR	100.00	105.41	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	60.54	13.68	9.16	12.25	
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00			2.46	17.46	
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	11.49	5.96	1.46	3.37	
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	3.23	5.56	2.51	1.71	2.32
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	4.48	8.82	2.98		
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	10.05	27.60	49.69	8.72	2.07
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		18.16			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	3.82		2.54		
SCRAPER,GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	28.87				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	9.17	5.84		81.32	
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	18.28	2.91			
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	20.41	17.90	12.69	4.45	32.93
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20			9.94		
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	4.93	18.77	22.15	5.51	65.00
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70		52.19			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					91.60
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	11.33				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			57.31		
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70		5.99			
MISC. METAL	100.00	102.50	107.30	114.30	121.00	130.40	134.17	170.03	195.60	210.10	9.28	4.37	15.38	4.28	2.75
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	193.60			21.48		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	45.41	30.10			
STEEL PLATES	100.00	102.90	108.30	115.10	120.60	137.60	142.80	174.88	203.75	209.70	3.12		1.71		
MACHINERY	100.00	103.35	108.99	114.93	120.55	123.61	128.88	151.98	188.62	201.91				90.14	
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	30.86	7.35	4.12	5.58	9.65


04A EARTH DAMS
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
JANUARY
JULY
DECEMBER
YEAR

FEATURE: 04 CONCRETE DAMS B

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00	100.00	100.00	100.00	1967	100.00
105.34	105.23	102.82	105.98	104.92	107.29	1968	105.14
112.15	113.89	107.89	114.52	111.12	117.56	1969	112.90
120.46	124.33	115.98	121.31	123.22	124.40	1970	122.64
131.47	134.63	125.76	135.13	136.46	141.07	1971	133.26
142.81	146.36	132.41	148.65	146.87	155.95	1972	144.57
148.37	153.91	138.20	157.66	151.84	169.35	1973	151.43
163.87	168.95	144.53	172.84	165.73	179.17	1974	165.37
190.88	179.47	194.65	192.94	189.36	194.35	1975	183.62
204.76	204.04	200.97	208.07	196.03	212.05	1976	203.80

CATEGORY WEIGHT

E	C	S	M	L	B
11.30	68.62	12.95	5.08	1.88	.17

*** 04 CONCRETE DAMS B

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.62	114.34	123.70	153.61	174.11	177.72	152.38	201.48	215.67

LABOR WEIGHT IN EARTHWORK CATEGORY: 34.11%

CONCRETE

100.00	104.21	114.22	123.62	154.44	174.62	177.33	184.98	173.26	218.00

LABOR WEIGHT IN CONCRETE CATEGORY: 34.27%

STEEL

100.00	104.37	117.14	122.38	154.41	171.77	178.74	165.17	208.07	217.51

LABOR WEIGHT IN STEEL CATEGORY: 17.42%

MECHANICAL

100.00	104.41	117.35	121.47	154.45	172.44	178.47	162.51	203.01	215.47

LABOR WEIGHT IN MECHANICAL CATEGORY: 42.64%

ELECTRICAL

100.00	104.39	115.84	123.54	155.41	173.49	179.12	146.62	206.49	214.34

LABOR WEIGHT IN ELECTRICAL CATEGORY: 54.33%

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.95	109.44	115.59	117.56	125.20	130.90	152.86	187.35	200.72

PLANT WEIGHT IN EARTHWORK CATEGORY: 44.67%

CONCRETE

100.00	104.85	109.17	124.71	131.29	126.71	130.73	149.05	207.60	184.28

PLANT WEIGHT IN CONCRETE CATEGORY: 8.25%

STEEL

100.00	104.53	109.70	114.41	118.20	124.88	128.91	150.29	181.71	196.36

PLANT WEIGHT IN STEEL CATEGORY: 6.23%

MECHANICAL

100.00	104.73	109.47	116.10	120.28	126.91	131.24	131.31	188.74	202.37

PLANT WEIGHT IN MECHANICAL CATEGORY: 2.04%

ELECTRICAL

100.00	105.36	110.36	116.42	120.01	126.52	130.48	153.22	187.83	201.71

PLANT WEIGHT IN ELECTRICAL CATEGORY: 4.58%

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.11	106.78	111.76	118.83	123.14	128.08	150.97	173.38	185.29

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 13.22%

CONCRETE

100.00	104.55	111.39	123.14	121.92	124.14	128.48	160.04	179.69	196.71

MATERIAL WEIGHT IN CONCRETE CATEGORY: 52.48%

STEEL

100.00	101.86	105.69	112.30	119.71	121.91	129.57	134.65	192.61	197.52

MATERIAL WEIGHT IN STEEL CATEGORY: 74.15%

MECHANICAL

100.00	105.69	112.07	113.41	122.68	131.07	142.71	166.97	185.38	201.84

MATERIAL WEIGHT IN MECHANICAL CATEGORY: 55.44%

ELECTRICAL

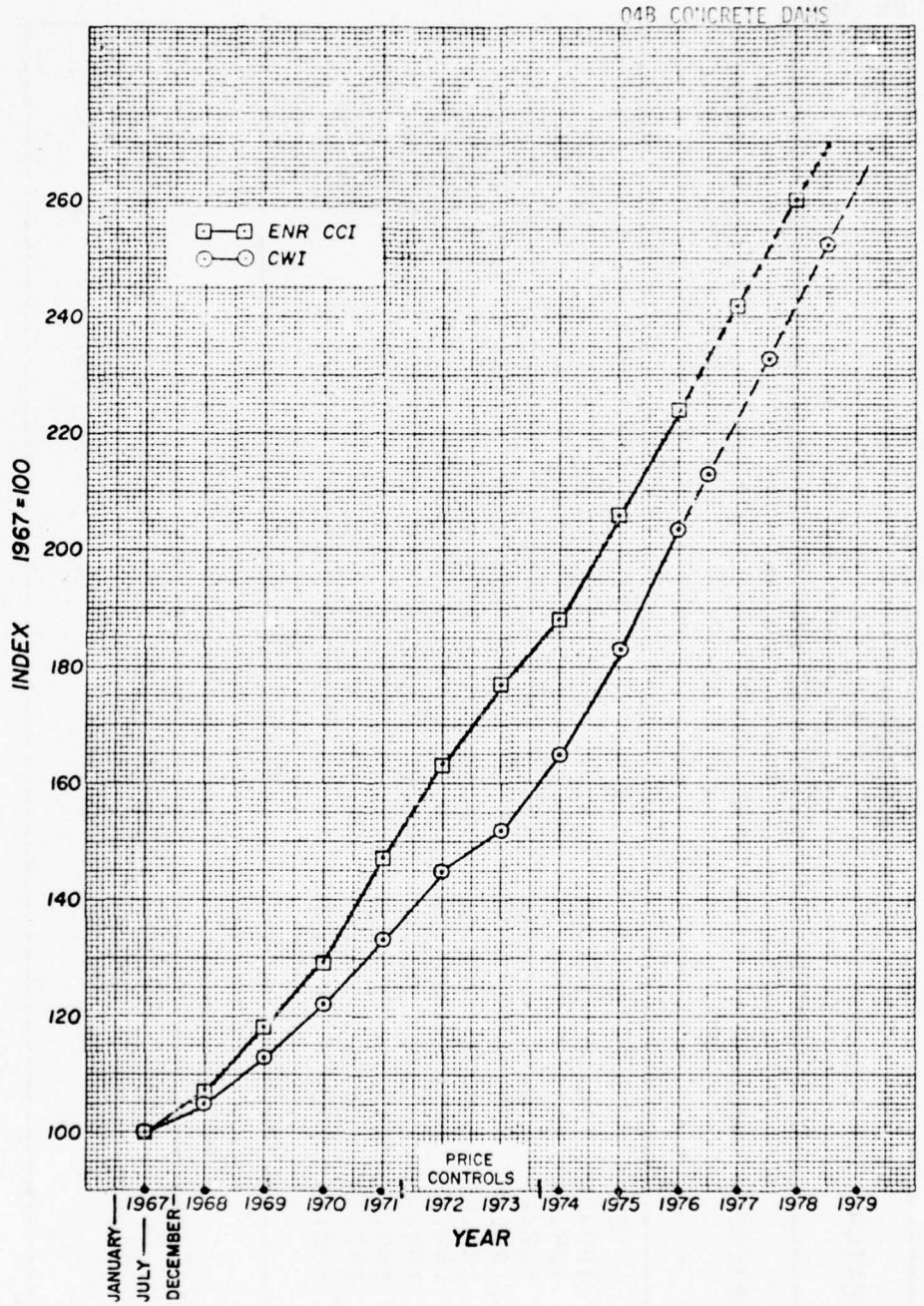
100.00	102.91	104.44	110.27	112.63	113.88	114.04	139.44	166.82	171.12

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: 41.33%

04 CONCRETE DAMS B

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00		21.65	2.49	1.56	
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		2.76			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00				2.06	72.03
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00	2.12	3.04	43.13	5.91	
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	39.93	42.27	25.67	15.88	2.81
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	195.05	206.17	32.38	18.08	9.48	30.34	
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11			3.48		
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00		5.60	8.85	36.53	
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	20.01	2.48	1.22	1.38	
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	5.50	4.13	5.66	6.34	25.16
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	3.62				
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	5.59	21.80	66.83	33.61	
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		55.68			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	6.84		12.30		
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	18.36				
SPECIAL MACH	100.00	105.20	110.20	117.70	126.10	129.00	134.10	151.30	189.40	205.30		3.93		22.38	
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	28.86			2.19	
TRUCKS	100.00	104.20	110.20	118.20	126.30	129.30	131.50	156.80	196.80	208.20	36.62	13.60	18.31	19.92	22.70
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20				7.46	
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	1.76	4.99	2.52	14.44	77.30
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70		36.28			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85				1.82	92.87
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	24.80				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			43.22	1.52	
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70		2.60		9.85	
MISC. METAL	100.00	102.50	107.30	114.30	121.00	130.40	134.17	170.03	195.60	210.10	28.70	1.72	34.65	30.49	
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60			18.37		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	34.87	10.31			
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70					
MACHINERY	100.00	103.35	108.99	114.93	120.55	123.61	128.88	151.98	188.62	201.91				14.38	
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	12.43	49.08	3.76	42.02	7.13


04B CONCRETE DAMS
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
YEAR
JANUARY
JULY
DECEMBER

05 LOCKS

FEATURE: 05 LOCKS

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00	100.00	100.00	100.00	1967	100.00
105.34	105.27	103.25	104.33	105.11	107.29	1968	104.91
112.46	113.35	108.80	109.85	111.97	117.56	1969	111.93
120.84	120.70	117.26	116.97	124.77	124.40	1970	119.92
133.93	134.20	128.54	126.90	139.87	141.07	1971	132.69
145.36	145.25	136.35	135.41	151.65	155.95	1972	143.03
152.81	151.90	142.22	147.55	156.98	169.35	1973	150.04
165.27	165.74	172.34	165.99	170.66	179.17	1974	167.12
187.69	189.52	195.60	189.11	193.30	194.35	1975	190.30
202.56	201.01	202.52	200.39	200.87	212.05	1976	201.75

CATEGORY WEIGHT

E	C	S	M	L	B
28.88	42.39	20.89	5.46	2.27	.11

••• 05 LOCKS

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.34	114.43	124.23	151.34	164.75	175.70	180.93	194.46	212.71

LABOR WEIGHT IN EARTHWORK CATEGORY: 44.70%

CONCRETE

100.00	106.23	118.69	132.19	166.77	173.59	174.50	185.51	208.67	219.45

LABOR WEIGHT IN CONCRETE CATEGORY: 37.72%

STEEL

100.00	106.34	116.91	131.47	153.47	171.14	174.30	186.87	206.68	217.13

LABOR WEIGHT IN STEEL CATEGORY: 23.40%

MECHANICAL

100.00	106.40	114.03	132.35	155.64	173.10	174.49	186.52	207.68	217.27

LABOR WEIGHT IN MECHANICAL CATEGORY: 13.73%

ELECTRICAL

100.00	106.37	116.40	113.62	165.45	173.44	174.34	186.39	206.59	214.46

LABOR WEIGHT IN ELECTRICAL CATEGORY: 20.57%

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.94	109.35	114.54	118.07	123.42	133.46	144.74	182.09	195.66

PLANT WEIGHT IN EARTHWORK CATEGORY: 33.34%

CONCRETE

100.00	104.32	107.43	114.02	118.44	123.49	127.48	151.45	186.47	186.59

PLANT WEIGHT IN CONCRETE CATEGORY: 14.43%

STEEL

100.00	104.67	109.81	114.79	118.70	125.46	129.55	151.82	185.10	199.99

PLANT WEIGHT IN STEEL CATEGORY: 3.78%

MECHANICAL

100.00	104.61	109.30	115.51	118.34	126.07	129.46	153.17	187.82	201.03

PLANT WEIGHT IN MECHANICAL CATEGORY: 7.71%

ELECTRICAL

100.00	105.63	110.39	115.98	121.20	125.42	130.73	152.45	185.58	200.08

PLANT WEIGHT IN ELECTRICAL CATEGORY: 1.97%

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.49	104.55	112.92	123.54	129.80	135.26	158.97	181.43	191.41

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 16.92%

CONCRETE

100.00	104.96	111.35	113.62	123.23	130.14	138.68	154.42	174.05	192.20

MATERIAL WEIGHT IN CONCRETE CATEGORY: 42.45%

STEEL

100.00	102.20	106.20	112.66	120.87	125.48	131.28	169.37	192.58	197.95

MATERIAL WEIGHT IN STEEL CATEGORY: 72.82%

MECHANICAL

100.00	103.75	107.72	112.96	120.02	126.04	140.77	162.35	184.24	195.77

MATERIAL WEIGHT IN MECHANICAL CATEGORY: 72.58%

ELECTRICAL

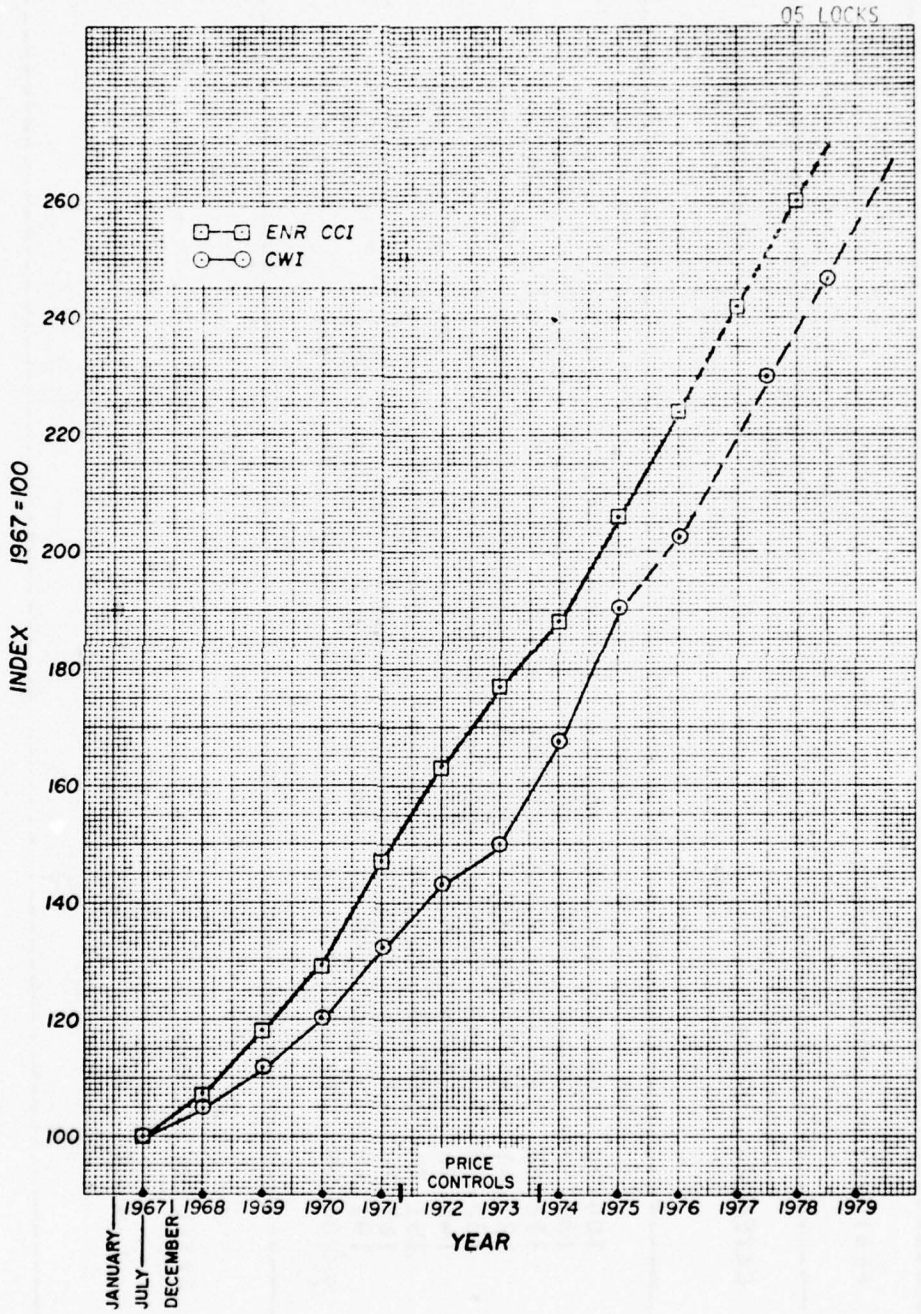
100.00	103.04	106.45	111.12	116.47	117.52	122.28	146.22	172.22	178.95

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: 17.54%

05 LOCKS

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00	1.27	31.22	2.01	3.37	
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		5.17			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00				3.02	75.20
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00		1.82	43.21	16.99	
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	23.11	40.50	27.80	26.31	5.89
OPERATOR	100.00	105.41	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	57.59	9.91	15.26	11.70	
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	150.13	176.52	181.74	184.21	210.10	216.00		2.52		27.07	
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	16.01	6.63	2.20	3.80	
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	2.01	2.20	9.50	7.72	18.98
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	4.15	9.74	3.02	1.69	
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	13.78	37.91	63.35	37.48	
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		20.36			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	11.84				
SCRAPER,GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	13.59				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	6.59	4.37			
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	30.98	1.74	2.25	1.55	
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	16.95	12.52	19.64	31.31	3.33
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20			2.79	5.97	
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	2.13	13.35	8.94	22.01	96.67
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70	4.88	36.81			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85				1.10	70.28
EXPLOSIVES	100.00	101.40	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	2.52				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			46.70	26.20	
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70		8.97			
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	6.20	3.86	20.85	24.73	16.98
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	193.60			11.35		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	31.45	44.09	1.13		
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70	41.70		14.97		
MACHINERY	100.00	103.35	108.99	114.93	120.55	123.61	128.88	151.98	188.62	201.91				7.18	
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	14.85	7.07	5.08	40.77	12.77


05 LOCKS
ENR CCI
CWI
INDEX 1967 = 100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
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YEAR
JANUARY
JULY
DECEMBER

FEATURE: 07 POWER PLANTS

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	R		
100.00	100.00	100.00	100.00	100.00	100.00	1967	100.00
105.52	105.48	102.94	104.58	104.83	107.29	1968	104.79
112.88	115.49	108.02	112.16	109.95	117.56	1969	111.26
121.41	124.77	117.21	121.28	117.88	124.40	1970	119.72
133.93	141.00	127.92	133.50	122.68	141.07	1971	128.54
145.96	154.99	134.54	142.97	126.68	155.95	1972	135.78
151.70	161.90	141.35	148.62	131.18	169.35	1973	141.26
165.73	174.44	177.70	166.96	148.86	179.17	1974	159.74
191.49	197.44	196.11	195.46	169.61	194.35	1975	185.20
206.09	211.07	200.18	206.91	184.35	212.05	1976	194.61

CATEGORY WEIGHT

E	C	S	M	L	R
4.56	20.21	10.87	8.28	55.07	1.01

*** 07 POWER PLANTS

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.44	116.38	124.34	152.65	171.44	177.60	182.13	200.37	215.99

LABOR WEIGHT IN EARTHWORK CATEGORY: 44.24%

CONCRETE

100.00	106.11	113.51	132.59	154.00	172.63	178.73	185.47	206.92	217.00

LABOR WEIGHT IN CONCRETE CATEGORY: 57.47%

STEEL

100.00	106.39	116.57	132.87	153.97	170.30	177.86	185.24	207.19	216.78

LABOR WEIGHT IN STEEL CATEGORY: 25.16%

MECHANICAL

100.00	106.57	116.15	132.48	155.82	173.25	179.46	184.65	207.23	216.55

LABOR WEIGHT IN MECHANICAL CATEGORY: 36.47%

ELECTRICAL

100.00	106.37	115.52	133.17	155.73	173.12	179.14	185.15	204.77	214.13

LABOR WEIGHT IN ELECTRICAL CATEGORY: 4.16%

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.09	110.08	116.03	119.46	126.07	131.79	153.76	188.84	203.14

PLANT WEIGHT IN EARTHWORK CATEGORY: 43.63%

CONCRETE

100.00	105.12	110.05	116.45	120.45	127.03	131.45	152.95	186.97	200.12

PLANT WEIGHT IN CONCRETE CATEGORY: 9.81%

STEEL

100.00	104.85	109.61	116.11	119.67	126.89	130.93	152.32	187.90	202.74

PLANT WEIGHT IN STEEL CATEGORY: 5.50%

MECHANICAL

100.00	104.34	109.09	115.76	119.31	126.60	130.38	154.46	190.58	201.65

PLANT WEIGHT IN MECHANICAL CATEGORY: 6.62%

ELECTRICAL

100.00	104.87	110.17	117.31	119.79	127.75	131.44	154.63	190.98	204.58

PLANT WEIGHT IN ELECTRICAL CATEGORY: .50%

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.63	107.37	111.59	119.61	122.40	124.68	148.92	168.54	180.49

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 12.08%

CONCRETE

100.00	104.50	111.41	113.71	124.32	132.34	141.36	161.52	183.93	203.95

MATERIAL WEIGHT IN CONCRETE CATEGORY: 32.72%

STEEL

100.00	101.63	106.79	111.68	119.13	122.16	124.73	176.92	192.74	193.96

MATERIAL WEIGHT IN STEEL CATEGORY: 44.14%

MECHANICAL

100.00	103.30	108.59	114.29	120.66	125.05	130.65	156.95	188.31	201.21

MATERIAL WEIGHT IN MECHANICAL CATEGORY: 56.41%

ELECTRICAL

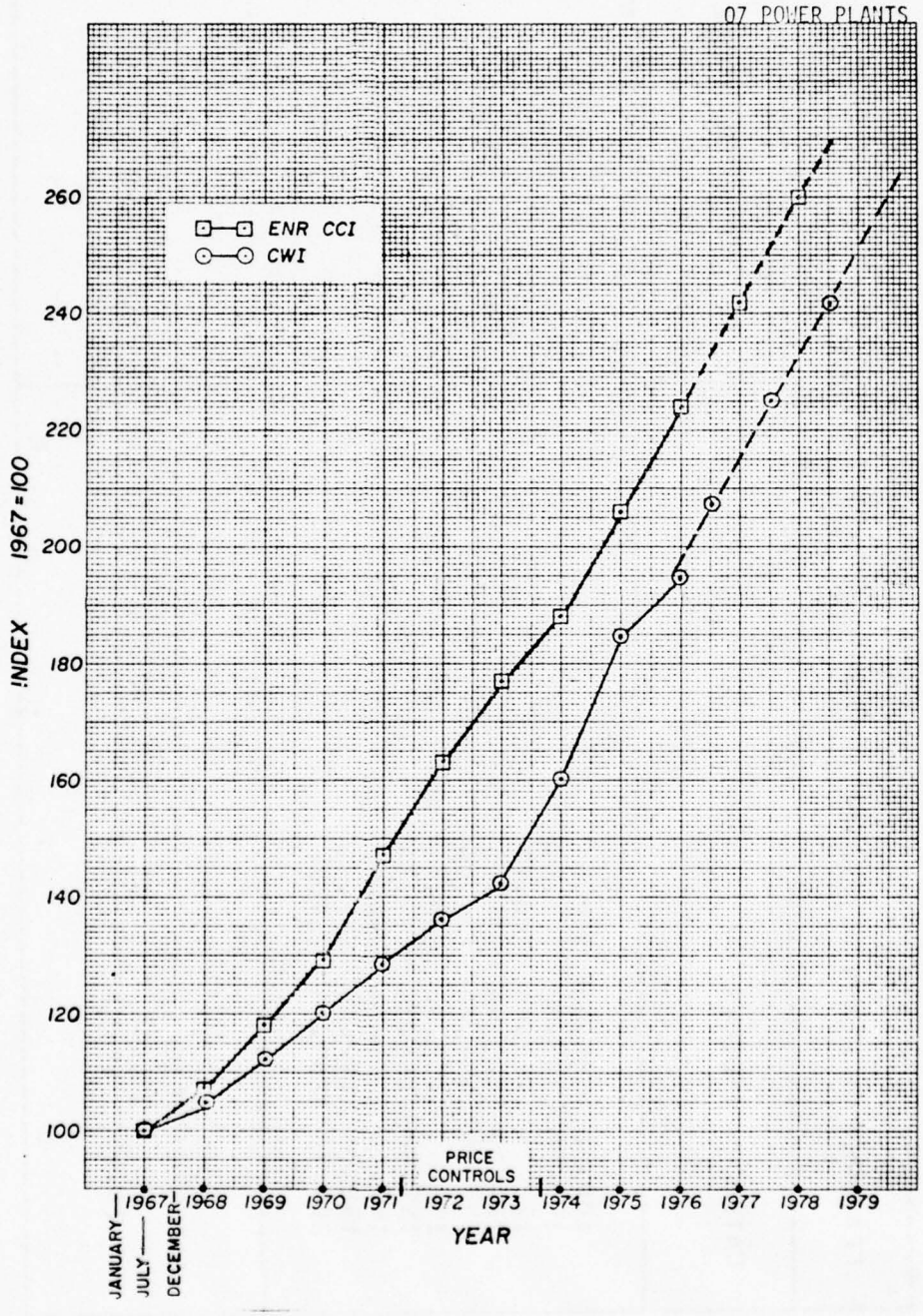
100.00	104.77	109.71	117.22	121.27	124.54	129.10	147.27	175.03	182.98

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: 99.33%

07 POWERPLANTS

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00		36.51	1.70	7.45	
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		4.95			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00				3.06	76.02
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00		2.15	56.12	19.55	2.12
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	42.50	29.99	14.39	17.38	8.87
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	41.67	15.99	8.26	10.49	5.98
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11			8.48		
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00		1.74	1.08	33.97	
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	13.91	4.38	2.67	4.81	4.13
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	1.92	4.29	7.30	3.29	2.88
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	2.28		1.08		
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	11.59	23.77	36.14	28.22	12.54
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		9.52			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	2.43				
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	16.33				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	6.90	4.06	14.21	8.85	8.86
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	24.86	9.29			2.45
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	30.57	26.23	27.27	35.91	46.98
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20				15.18	
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	5.07	27.13	21.30	11.84	29.20
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.10	161.93	193.29	214.70	1.43	53.89			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85				2.28	64.19
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	25.01				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			32.88	5.81	
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70	1.57	8.65			
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	11.94	7.99	24.59	21.84	
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60			33.67		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	43.28	19.58			
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70					
MACHINERY	100.00	103.35	108.99	114.93	120.55	123.61	128.88	151.98	188.62	201.91				60.87	
TURBINES	100.00	108.50	119.25	130.00	140.50	145.75	151.75	164.25	190.75	206.50					35.81
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	16.77	9.98	8.86	9.20	


07 POWER PLANTS
ENR CCI
CWI
INDEX 1967 = 100
260
240
220
200
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160
140
120
100
PRICE CONTROLS
JANUARY
JULY
DECEMBER
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
YEAR

FEATURE: 08 ROADS RAILROADS AND BRIDGES A.ROADS ONLY

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00				1967	100.00
105.56	105.82	107.57				1968	105.67
112.78	111.64	108.72				1969	112.39
120.07	123.84	116.22				1970	121.06
133.15	139.72	125.98				1971	134.85
145.00	152.90	133.91				1972	147.01
151.68	160.35	137.53				1973	153.84
165.10	171.14	164.81				1974	166.79
190.30	192.45	192.81				1975	190.95
204.74	205.98	208.24				1976	205.15

CATEGORY WEIGHT

E	C	S	M	L	B
70.18	27.97	1.85			

*** 08 ROADS RAILROADS AND BRIDGES A.ROADS ONLY

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.52	110.35	102.54	152.99	171.94	177.65	191.46	200.74	216.40

LABOR WEIGHT IN EARTHWORK CATEGORY: 42.62%

CONCRETE

100.00	104.24	111.59	133.05	154.57	173.13	179.45	196.14	208.41	217.77

LABOR WEIGHT IN CONCRETE CATAGORY: 51.77%

STEEL

100.00	107.42	117.51	130.06	157.07	175.19	180.33	183.39	208.52	222.17

LABOR WEIGHT IN STEEL CATEGORY: 14.75%

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATEGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.98	109.78	115.46	119.02	124.95	132.91	152.51	186.95	200.65

PLANT WEIGHT IN EARTHWORK CATEGORY: 42.64%

CONCRETE

100.00	105.10	110.11	115.93	122.86	129.24	132.96	152.24	189.27	204.60

PLANT WEIGHT IN CONCRETE CATAGORY: 6.09%

STEEL

100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.30	196.80	208.20

PLANT WEIGHT IN STEEL CATEGORY: 9.51%

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATEGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.49	109.43	113.15	119.62	124.99	130.93	152.73	169.90	183.02

MATERIAL WEIGHT IN EARTHWORK CATEGORY 14.30%

CONCRETE

100.00	105.40	111.91	113.64	123.93	131.37	140.84	155.46	173.31	191.66

MATERIAL WEIGHT IN CONCRETE CATEGORY: 42.14%

STEEL

100.00	102.35	104.23	112.34	119.26	123.72	127.14	161.01	188.17	193.79

MATERIAL WEIGHT IN STEEL CATEGORY: 75.74%

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATEGORY:

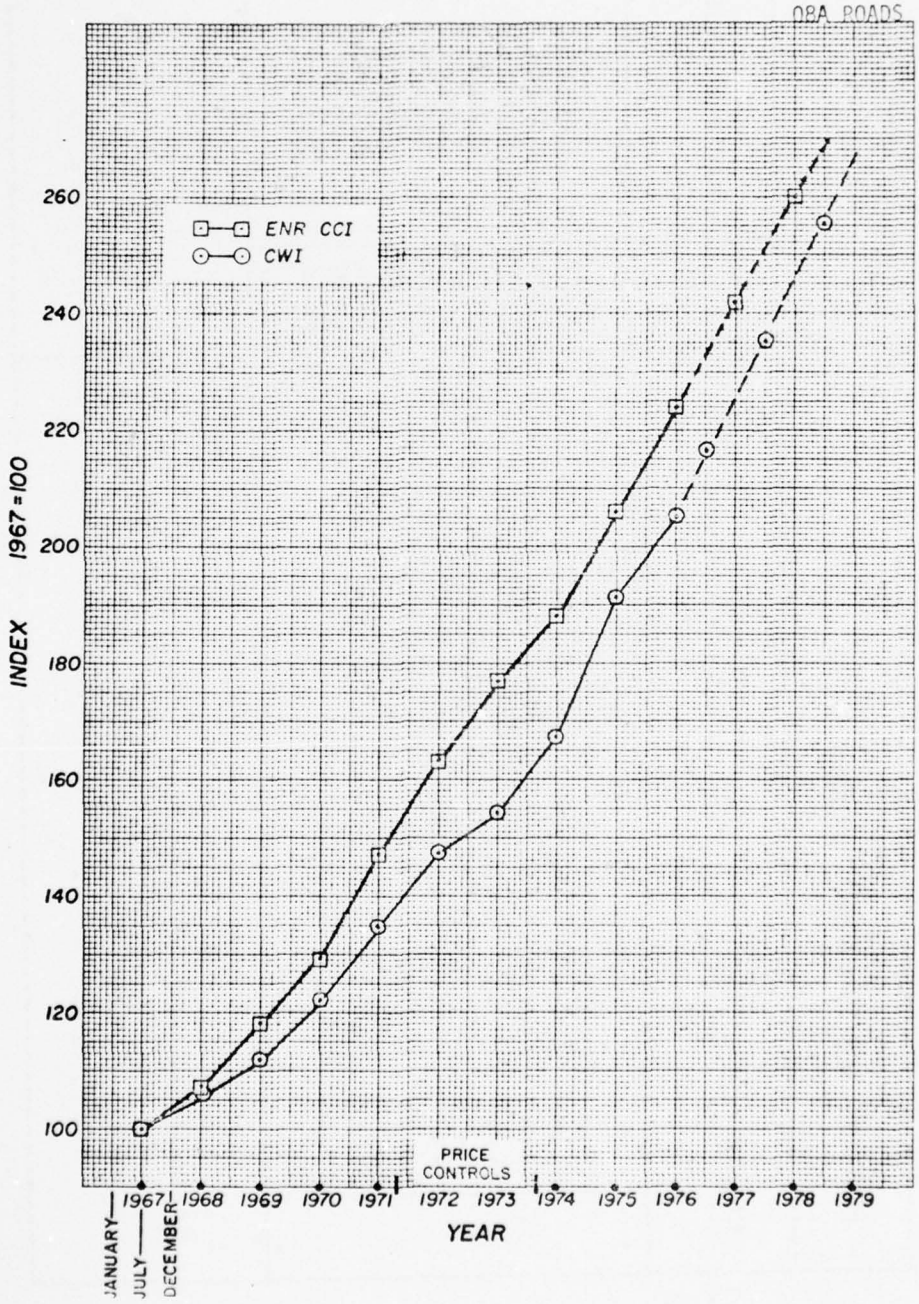
ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATEGORY:

••• 08 ROADS RAILROADS AND BRIDGES A-ROADS ONLY

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00	1.38	42.34			
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		6.18			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00					
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	42.59	31.72	41.11		
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	36.78	12.52			
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00		3.00			
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	19.09	3.60	38.89		
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	.17	.63			
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	4.91				
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	1.89	10.89			
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	3.72				
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	18.83				
SPECIAL MACH	100.00	105.20	110.20	117.70	126.10	129.00	134.10	151.30	189.40	205.30	4.55	62.22			
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	30.44	1.13			
TRUCKS	100.00	104.20	110.20	118.20	126.30	129.30	131.50	156.80	196.80	208.20	30.34	12.87	1.08		
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20					
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	5.14	11.88			
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70		29.80			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	14.84				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20	2.72		85.17		
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70	3.82	12.58			
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	10.86	3.62			
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60					
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	36.94	50.02	5.44		
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70		3.00	8.89		
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	30.83	.98	.54		


08A ROADS
ENR CCI
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INDEX 1967=100
260
240
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PRICE CONTROLS
1967
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YEAR
JANUARY
JULY
DECEMBER

FEATURE: 08B(1) CONCRETE BRIDGES

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00				1967	100.00
104.56	105.91	103.74				1968	105.31
111.45	114.30	110.26				1969	113.14
120.15	120.47	120.21				1970	120.38
134.94	135.23	133.18				1971	134.76
147.20	147.43	142.28				1972	146.27
151.80	157.37	149.11				1973	155.03
166.57	171.85	177.62				1974	172.60
189.63	192.27	196.11				1975	192.85
201.61	210.40	202.46				1976	207.83

CATEGORY WEIGHT					
E	C	S	M	L	B
9.67	68.51	21.82			

*** 08B(1) CONCRETE BRIDGES

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.29	117.14	124.32	153.17	173.65	174.38	183.45	202.43	216.95

LABOR WEIGHT IN EARTHWORK CATEGORY: 47.25%

CONCRETE

100.00	106.02	117.43	131.79	153.44	172.02	174.19	184.70	205.86	218.52

LABOR WEIGHT IN CONCRETE CATEGORY: 37.75%

STEEL

100.00	106.44	116.41	132.47	154.58	171.24	178.63	185.28	202.18	211.42

LABOR WEIGHT IN STEEL CATEGORY: 37.47%

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATAGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.05	104.98	109.54	111.71	116.40	120.22	138.05	165.66	176.45

PLANT WEIGHT IN EARTHWORK CATEGORY: 27.20%

CONCRETE

100.00	104.96	109.35	115.37	120.44	126.33	130.73	131.66	185.08	209.92

PLANT WEIGHT IN CONCRETE CATEGORY: 21.50%

STEEL

100.00	102.55	109.61	116.35	119.43	127.30	131.20	153.83	189.85	203.42

PLANT WEIGHT IN STEEL CATEGORY: 9.82%

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATAGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	102.97	107.83	114.40	125.98	132.67	136.30	165.73	191.46	200.03

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 25.55%

CONCRETE

100.00	106.32	113.65	113.68	126.17	135.78	152.14	181.14	183.24	209.73

MATERIAL WEIGHT IN CONCRETE CATEGORY: 40.74%

STEEL

100.00	102.05	105.72	112.19	120.52	124.46	131.47	176.57	192.96	195.90

MATERIAL WEIGHT IN STEEL CATEGORY: 52.71%

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATAGORY:

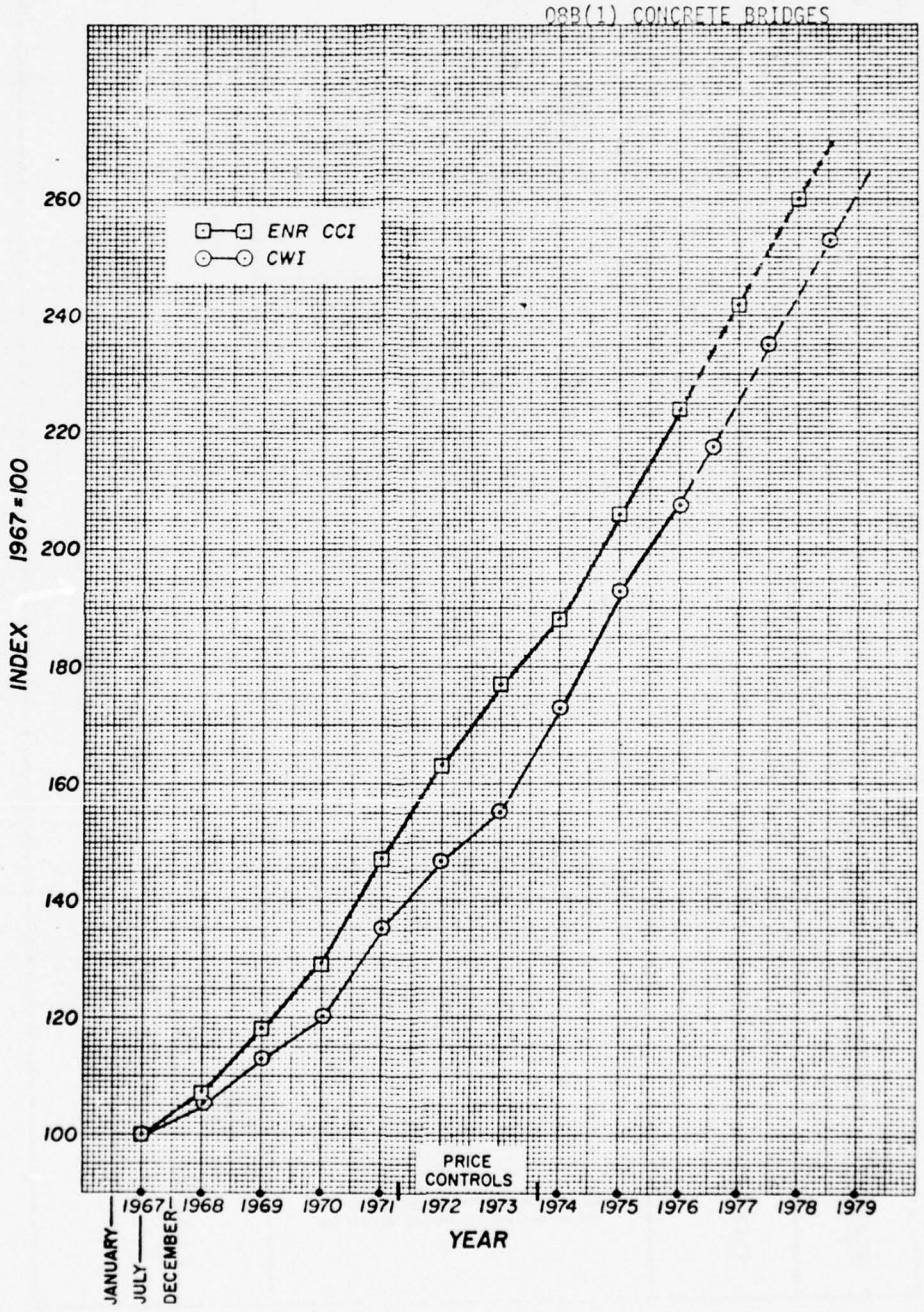
ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATAGORY:

088(1)CONCRETE BRIDGES

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	151.92	171.57	178.43	188.24	209.41	216.00		22.70			
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		15.03			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00		5.35	56.31		
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	53.18	29.84	26.69		
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	40.20	21.21	6.38		
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	6.70	5.87	3.33		
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00			7.39		
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	25.43				
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	22.41	67.05	30.14		
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		3.54			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	11.21				
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40					
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30		3.54	16.93		
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	11.44	2.08			
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	20.26	9.08	33.33		
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20		1.08	4.76		
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	9.05	13.63	14.81		
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70		35.01			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	2.75				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			19.43		
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70		24.17			
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	17.43	6.62	26.13		
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60		21.32	28.99		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	19.27	6.17			
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70	60.95		10.36		
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70		6.70	15.09		


08B(1) CONCRETE BRIDGES
ENR CCI
CWI
INDEX 1967=100
260
240
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180
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PRICE CONTROLS
1967
1968
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YEAR
JANUARY
JULY
DECEMBER

FEATURE: 08B(2) STEEL BRIDGES

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00				1967	100.00
104.79	106.03	103.52				1968	104.47
111.45	115.13	108.83				1969	111.19
119.72	123.77	117.22				1970	119.66
133.43	139.52	125.89				1971	131.08
144.77	153.93	134.10				1972	141.64
149.21	161.66	139.42				1973	147.78
161.22	173.94	169.63				1974	170.77
186.49	196.81	195.47				1975	195.54
198.26	211.13	203.34				1976	205.88

CATEGORY WEIGHT					
E	C	S	M	L	B
4.58	35.56	59.86			

***08B(2) STEEL BRIDGES
LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.54	117.41	129.64	155.33	175.12	180.55	183.45	208.88	220.93

LABOR WEIGHT IN EARTHWORK CATEGORY: 46.48%

CONCRETE

100.00	106.07	117.49	131.24	154.11	172.44	178.86	184.54	206.23	216.51

LABOR WEIGHT IN CONCRETE CATEGORY: 53.51%

STEEL

100.00	106.44	116.74	132.34	154.56	171.39	176.64	185.29	208.56	214.09

LABOR WEIGHT IN STEEL CATEGORY: 14.69%

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATAGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.49	105.98	110.84	113.38	114.19	122.20	139.97	168.86	179.55

PLANT WEIGHT IN EARTHWORK CATEGORY: 31.76%

CONCRETE

100.00	104.94	109.34	115.37	120.45	126.24	130.71	152.47	185.01	199.97

PLANT WEIGHT IN CONCRETE CATEGORY: 22.26%

STEEL

100.00	104.13	108.78	115.34	117.65	126.07	129.81	154.99	190.92	200.32

PLANT WEIGHT IN STEEL CATEGORY: 34.05%

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATAGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.22	107.40	113.31	120.08	124.28	127.29	148.08	168.07	180.38

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 20.78%

CONCRETE

100.00	104.95	114.79	113.68	126.61	137.53	152.08	170.23	186.68	209.54

MATERIAL WEIGHT IN CONCRETE CATEGORY: 24.25%

STEEL

100.00	101.92	105.74	112.41	120.48	125.13	130.82	173.99	193.57	199.68

MATERIAL WEIGHT IN STEEL CATEGORY: 47.26%

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATAGORY:

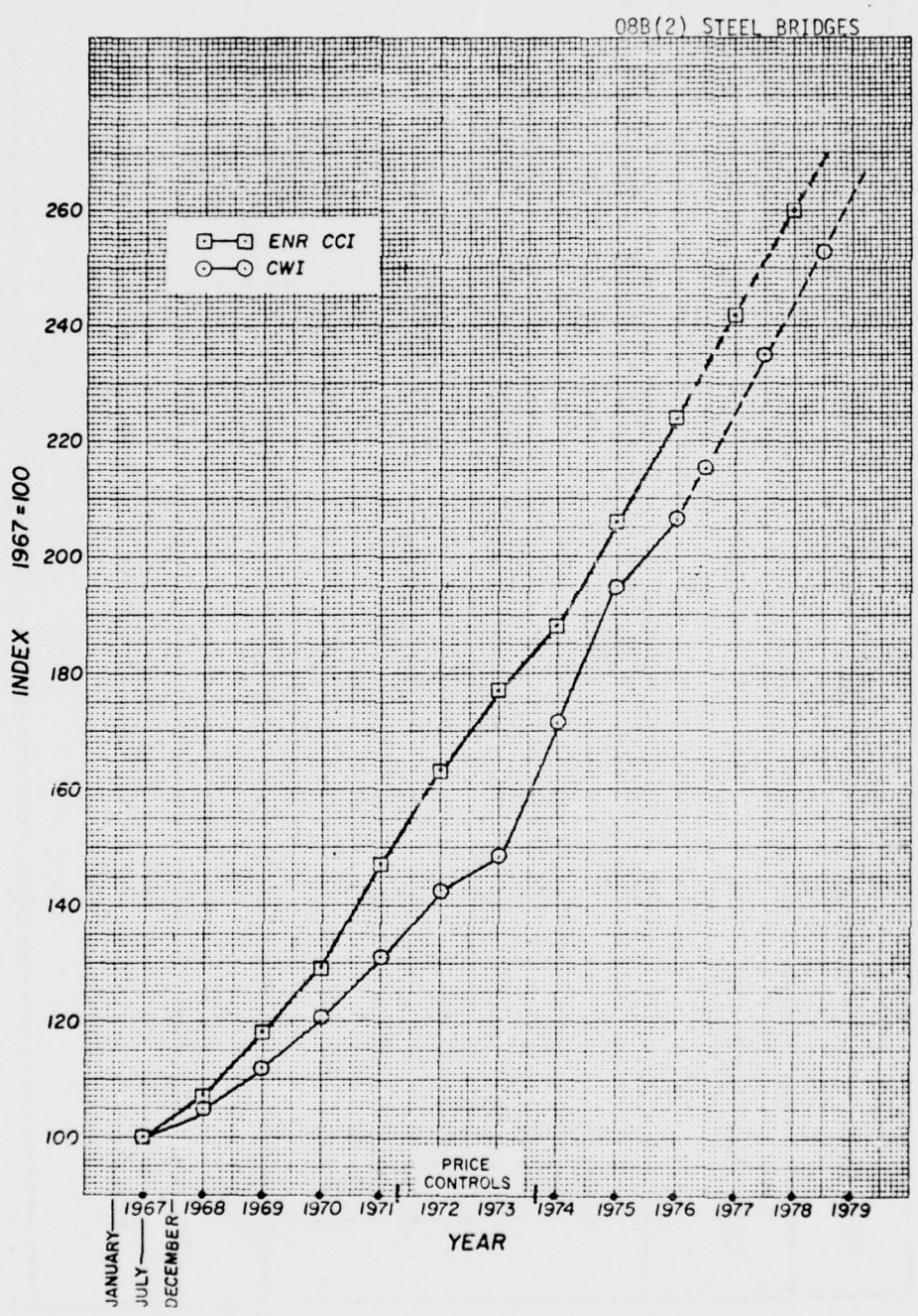
ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATAGORY:

088(2) STEEL BRIDGES

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	151.92	171.57	178.43	188.24	209.41	216.00		21.03			
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		10.63			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00		12.12			
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00			92.29		
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	72.99	34.17	27.01		
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	18.25	17.51	9.77		
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11			4.14		
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.18	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	154.96	170.89	175.95	179.75	196.20	217.72	8.76	4.93	3.87		
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00			6.94		
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	21.50				
CRANE	100.00	104.90	109.00	114.70	128.60	126.00	130.50	152.20	184.30	201.80	10.28	57.52	25.40		
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		5.08			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	11.21				
SCRAPER/GRADR	100.00	105.30	110.10	115.20	128.60	124.40	136.10	160.40	195.60	213.40					
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	9.35	4.88	2.93		
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	16.82	3.01			
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	18.69	8.45	36.57		
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20		3.57	22.07		
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	12.15	17.29	13.03		
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70		33.33			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	6.25				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			22.62		
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70		22.45			
MISC. METAL	100.00	102.50	107.30	114.30	121.00	130.40	134.17	170.03	195.60	210.10	34.38	19.17	50.71		
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60			20.67		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	59.97	15.89			
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70					
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.80	187.70		9.15	6.80		


08B(2) STEEL BRIDGES
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
YEAR
JANUARY
JULY
DECEMBER

FEATURE: 08C RAILROADS

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00						1967	100.00
106.63						1968	106.63
114.43						1969	114.43
121.45						1970	121.45
138.09						1971	138.09
151.07						1972	151.07
158.74						1973	158.74
165.06						1974	165.06
192.78						1975	192.78
208.23						1976	208.23

CATEGORY WEIGHT					
E	C	S	M	L	B
100.00					

*** 08C RAILROADS
LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	107.35	117.51	130.05	155.42	175.13	180.31	183.40	204.42	222.02

LABOR WEIGHT IN EARTHWORK CATEGORY: 44.56%

CONCRETE

LABOR WEIGHT IN CONCRETE CATAGORY:

STEEL

LABOR WEIGHT IN STEEL CATAGORY:

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATAGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.50	111.33	117.57	118.68	128.10	133.10	155.82	192.61	206.18

PLANT WEIGHT IN EARTHWORK CATEGORY: 12.48%

CONCRETE

PLANT WEIGHT IN CONCRETE CATAGORY:

STEEL

PLANT WEIGHT IN STEEL CATAGORY:

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATAGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.22	112.12	113.69	124.24	132.80	143.83	161.55	176.64	194.58

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 42.95%

CONCRETE

MATERIAL WEIGHT IN CONCRETE CATAGORY:

STEEL

MATERIAL WEIGHT IN STEEL CATAGORY:

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATAGORY:

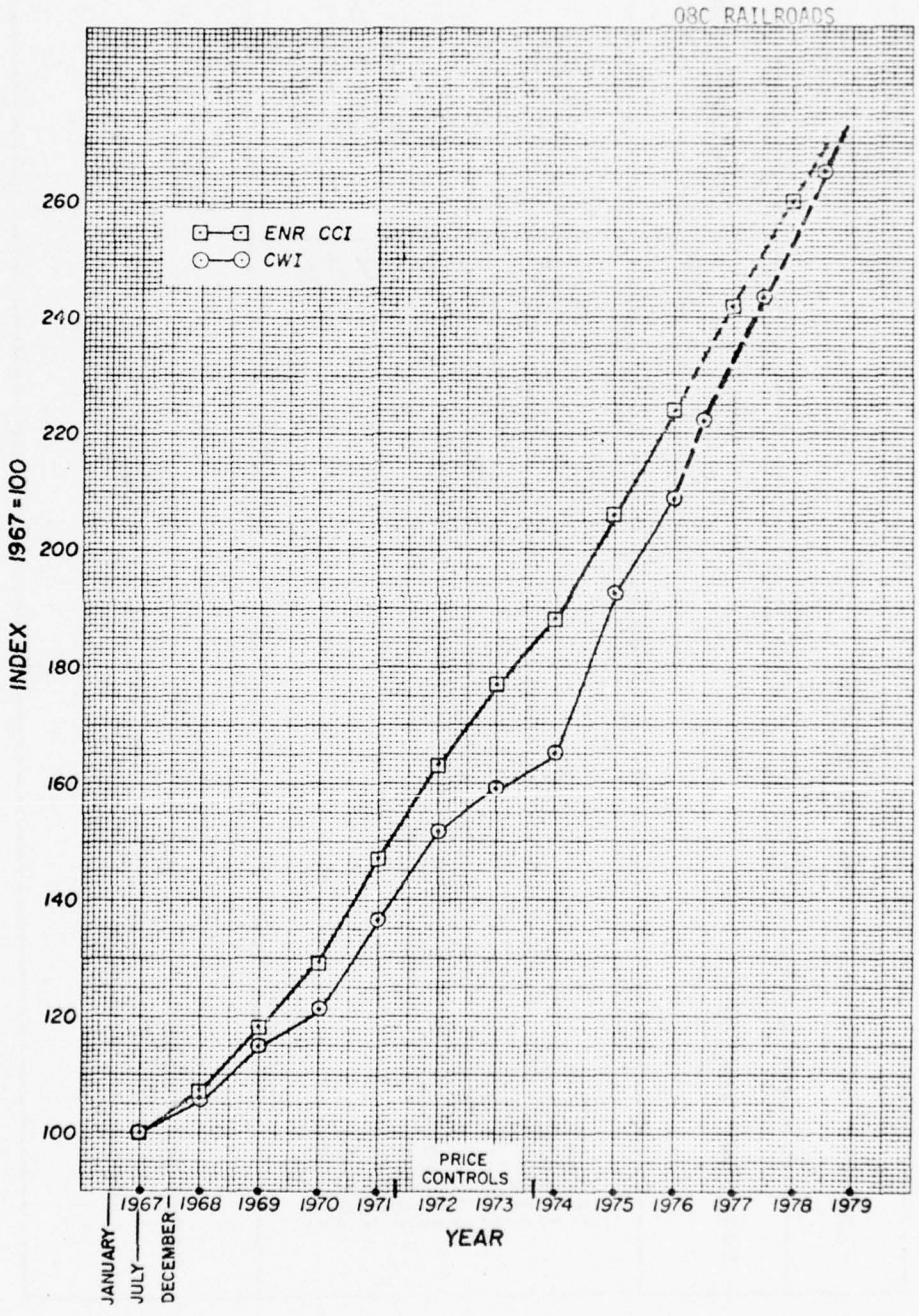
ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATAGORY:

••• 08 RAILROADS C

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00					
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00					
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00					
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	61.45				
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	1.50				
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	37.05				
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00					
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00					
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80					
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40					
SPECIAL MACH	100.00	105.20	110.20	117.70	126.10	129.00	134.10	151.30	189.40	205.30	2.15				
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	1.08				
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	44.39				
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20	44.39				
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80					
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70					
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85	2.19				
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20	17.50				
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70	37.19				
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10					
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60					
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	43.12				
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70					
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70					


08C RAILROADS
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
YEAR
JANUARY
JULY
DECEMBER

09A CHANNELS AND CANALS (Based on estimates containing only earthwork job items).

FEATURE: 09 CHANNELS AND CANALS A

CATEGORY INDICES

E	C	S	M	L	B
100.00					
105.32					
111.72					
119.76					
132.74					
138.61					
143.41					
158.32					
181.68					
196.53					

YEAR	FEATURE INDEX
1967	100.00
1968	105.32
1969	111.72
1970	119.76
1971	132.74
1972	138.61
1973	143.41
1974	158.32
1975	181.68
1976	196.53

CATEGORY WEIGHT

E	C	S	M	L	B
100.00					

09A CHANNELS AND CANALS (Based on estimates containing only earthwork job items).

*** 09 CHANNELS AND CANALS A

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.82	114.38	129.42	151.78	169.15	174.94	180.33	192.96	212.34

LABOR WEIGHT IN EARTHWORK CATEGORY: 29.62%

CONCRETE

LABOR WEIGHT IN CONCRETE CATEGORY:

STEEL

LABOR WEIGHT IN STEEL CATEGORY:

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATEGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.12	110.69	117.27	118.73	128.02	132.30	155.91	192.16	205.85

PLANT WEIGHT IN EARTHWORK CATEGORY: 42.03%

CONCRETE

PLANT WEIGHT IN CONCRETE CATEGORY:

STEEL

PLANT WEIGHT IN STEEL CATEGORY:

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATEGORY

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATEGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.05	108.40	113.36	119.16	122.41	126.93	138.90	154.40	166.16

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 28.35%

CONCRETE

MATERIAL WEIGHT IN CONCRETE CATEGORY:

STEEL

MATERIAL WEIGHT IN STEEL CATEGORY:

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATEGORY:

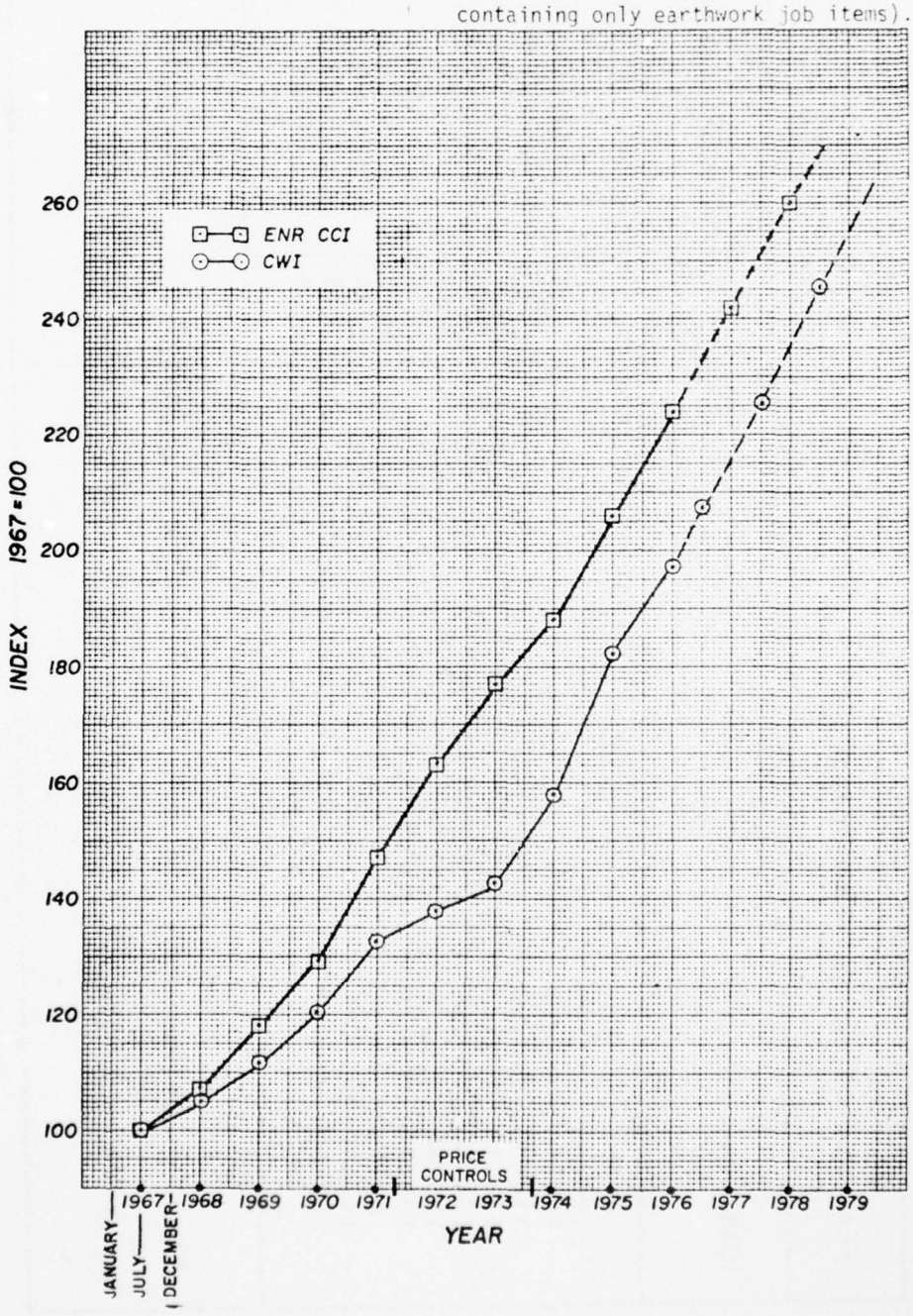
09A CHANNELS AND CANALS (BASED ON ESTIMATES CONTAINING ONLY EARTHWORK JOB ITEMS).

09 CHANNELS AND CANALS A

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00					
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00					
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00	10.05				
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	52.54				
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17					
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	32.81				
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	4.60				
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00					
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	16.48				
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	1.03				
SPECIAL MACH	100100	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30					
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	30.29				
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	51.94				
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20					
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	.30				
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70					
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20					
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70					
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10					
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60					
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	85.48				
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70					
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	14.52				

09A CHANNELS AND CANALS (Based on estimates containing only earthwork job items).



09B CHANNELS AND CANALS (Based on estimates containing both earthwork and concrete work).

FEATURE: 09 CHANNELS AND CANALS B

CATEGORY INDICES

E	C	S	M	L	B
100.00	100.00				
105.56	104.47				
112.56	113.96				
121.19	123.82				
131.65	139.45				
143.44	151.76				
148.78	158.28				
164.79	172.31				
191.08	197.55				
207.62	210.97				

YEAR	FEATURE INDEX
1967	100.00
1968	105.54
1969	112.59
1970	121.25
1971	131.82
1972	143.63
1973	149.00
1974	164.96
1975	191.23
1976	207.70

CATEGORY WEIGHT

E	C	S	M	L	B
97.76	2.24				

09B CHANNELS AND CANALS (Based on estimates containing both earthwork and concrete work).

*** 09 CHANNELS AND CANALS B

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.44	114.76	129.43	152.75	171.00	176.72	181.46	194.91	214.92

LABOR WEIGHT IN EARTHWORK CATEGORY: 37.51%

CONCRETE

100.00	106.42	117.61	133.17	155.06	172.33	178.93	185.44	208.90	218.02

LABOR WEIGHT IN CONCRETE CATEGORY: 52.71%

STEEL

LABOR WEIGHT IN STEEL CATEGORY:

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATEGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.04	110.28	114.55	118.47	127.23	132.41	155.58	191.45	206.25

PLANT WEIGHT IN EARTHWORK CATEGORY: 56.17%

CONCRETE

100.00	103.90	107.04	112.31	115.92	120.73	125.03	144.04	174.14	186.33

PLANT WEIGHT IN CONCRETE CATEGORY: 9.23%

STEEL

PLANT WEIGHT IN STEEL CATEGORY:

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATEGORY

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATEGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.48	107.99	113.39	119.90	123.82	128.48	147.68	165.04	176.60

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 4.32%

CONCRETE

100.00	103.23	110.58	113.47	123.64	130.80	137.75	160.97	187.51	207.18

MATERIAL WEIGHT IN CONCRETE CATEGORY: 39.06%

STEEL

MATERIAL WEIGHT IN STEEL CATEGORY:

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATEGORY:

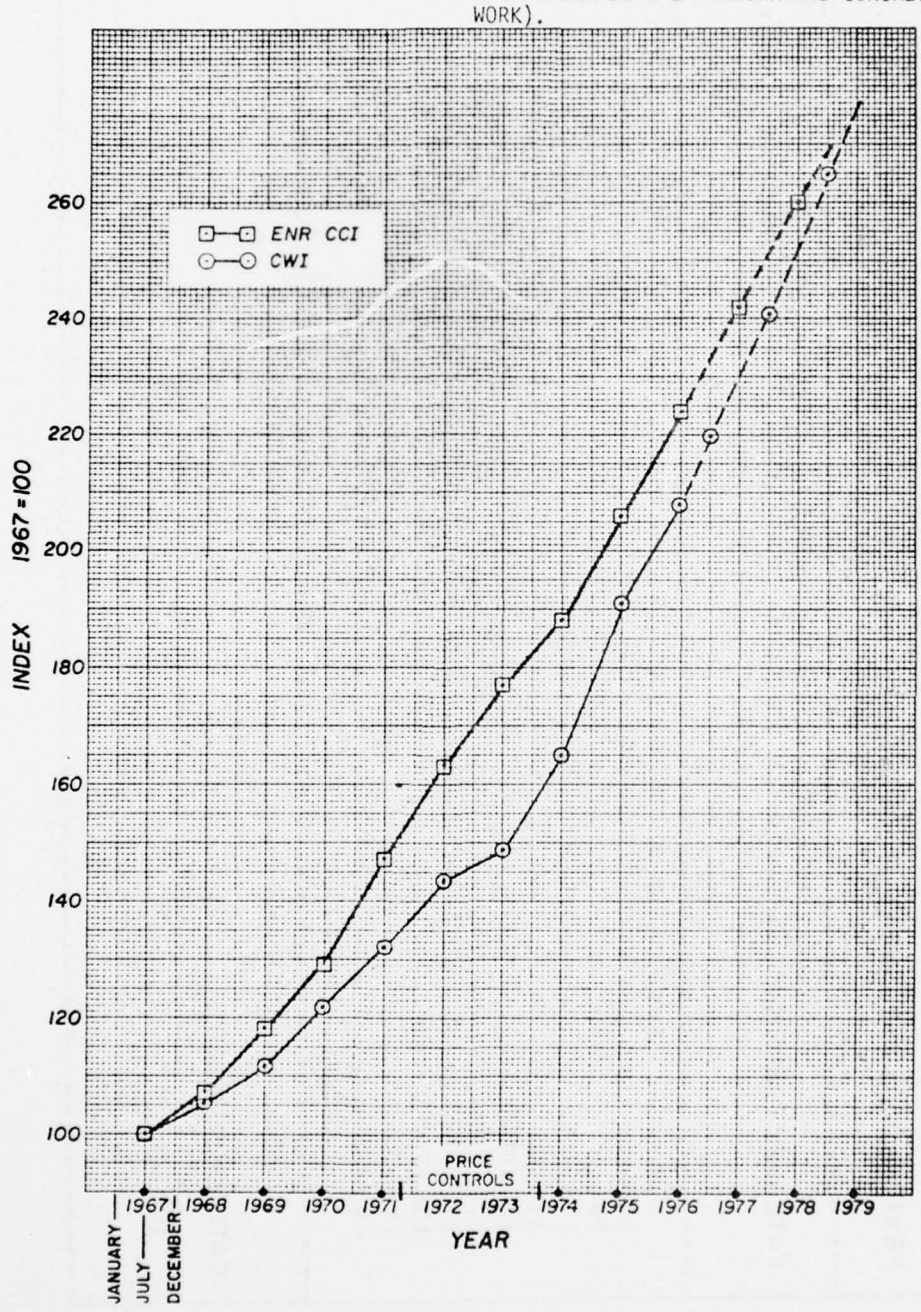
09 CHANNELS AND CANALS B

RESOURCE TYPE INDICES AND WEIGHTS

09B CHANNELS AND CANALS (BASED ON ESTIMATES CONTAINING BOTH EARTHWORK AND CONCRETE WORK).

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	151.92	171.57	178.43	188.24	209.41	216.00		14.98			
CEMENT MASON	100.00	104.95	116.83	131.36	152.48	171.29	177.23	187.13	207.92	211.00		13.73			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00		27.55			
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	30.85	27.73			
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	43.45				
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	23.04	14.08			
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	2.66				
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00		18.09			
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	28.40	21.11			
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		5.53			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	13.94				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30		12.04			
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	19.10	19.60			
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	38.55	14.07			
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20		2.51			
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80		7.03			
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70	2.50	74.39			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85	1.85				
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20	1.19				
LUMBER	100.00	120.50	134.30	113.30	141.09	167.70	214.29	211.44	200.60	243.70		1.22			
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	17.74				
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60	2.30				
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.98	162.50	62.85	5.12			
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70	1.01				
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.80	187.70	11.35	19.29			

09B CHANNELS AND CANALS (BASED ON ESTIMATES CONTAINING BOTH EARTHWORK AND CONCRETE WORK).



FEATURE: 10 BREAKWATER & SEAWALLS

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00						1967	100.00
104.83						1968	104.83
111.42						1969	111.42
118.88						1970	118.88
127.05						1971	127.05
136.29						1972	136.29
141.06						1973	141.06
158.76						1974	158.76
188.03						1975	188.03
201.26						1976	201.26

CATEGORY WEIGHT					
E	C	S	M	L	B
100.00					

*** 10 BREAKWATERS & SEAWALLS

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.54	117.44	130.86	153.77	171.92	177.65	181.85	199.63	213.83

LABOR WEIGHT IN EARTHWORK CATEGORY: 23.00%

CONCRETE

LABOR WEIGHT IN CONCRETE CATAGORY:

STEEL

LABOR WEIGHT IN STEEL CATAGORY:

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATAGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.58	110.04	116.21	119.46	126.68	130.99	153.18	187.94	201.32

PLANT WEIGHT IN EARTHWORK CATEGORY: 65.00%

CONCRETE

PLANT WEIGHT IN CONCRETE CATAGORY:

STEEL

PLANT WEIGHT IN STEEL CATAGORY:

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATAGORY:

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATAGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.21	107.01	110.40	116.92	120.07	125.44	144.72	166.32	176.82

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 12.00%

CONCRETE

MATERIAL WEIGHT IN CONCRETE CATAGORY:

STEEL

MATERIAL WEIGHT IN STEEL CATAGORY:

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATAGORY:

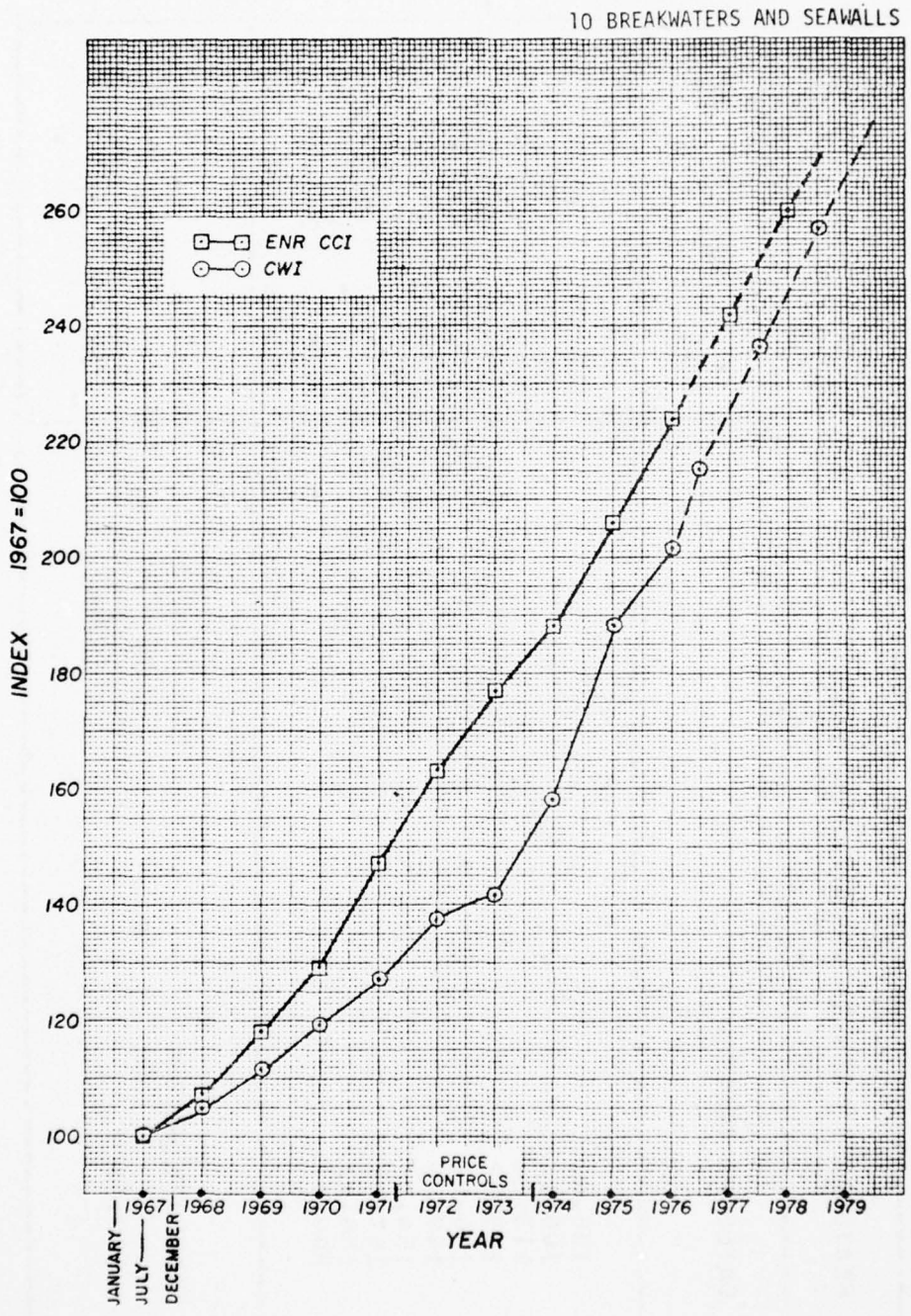
ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATAGORY:

10 BREAKWATERS

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	151.92	171.57	178.43	188.24	209.41	216.00					
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00					
ELECTRICIAN	100.00	106.25	115.18	133.93	154.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00					
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	17.05				
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	40.38				
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	150.13	176.52	181.74	184.21	210.10	216.00	31.09				
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	10.76				
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00					
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00					
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	23.10				
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40					
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	4.46				
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	8.26				
TRUCKS	100.00	104.20	110.20	118.20	116.30	129.30	131.50	156.80	196.80	208.20	27.90				
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20					
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	34.38				
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70					
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	39.80				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20					
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70					
MISC. METAL	100.00	102.50	107.30	114.30	121.00	130.40	134.17	170.03	195.60	210.10	1.54				
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60					
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	41.86				
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70					
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	18.80				


10 BREAKWATERS AND SEAWALLS
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
JANUARY
JULY
DECEMBER
YEAR

11A LEVEES AND FLOODWALLS (Based on estimates for levees with heaped earth with aggregate or riprap slope protection).

FEATURE: 11 LEVEES &FLOODWALLS GROUP A

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00						1967	100.00
106.12						1968	106.12
113.34						1969	113.34
123.12						1970	123.12
136.97						1971	136.97
149.55						1972	149.55
154.85						1973	154.85
167.00						1974	167.00
188.41						1975	188.41
204.97						1976	204.97

CATEGORY WEIGHT					
E	C	S	M	L	B
100.00					

11A LEVEES AND FLOODWALLS (Based on estimates for levees with heaped earth with aggregate or riprap slope protection).

11 LEVEES- GROUP A

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	107.30	117.74	130.44	152.61	171.45	177.46	182.80	196.78	214.65

LABOR WEIGHT IN EARTHWORK CATEGORY: 52.00%

CONCRETE

LABOR WEIGHT IN CONCRETE CATEGORY:

STEEL

LABOR WEIGHT IN STEEL CATEGORY:

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATEGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.09	108.64	115.60	120.09	126.41	131.28	153.32	186.89	203.07

PLANT WEIGHT IN EARTHWORK CATEGORY: 37.00%

CONCRETE

PLANT WEIGHT IN CONCRETE CATEGORY:

STEEL

PLANT WEIGHT IN STEEL CATEGORY:

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATEGORY

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATEGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.04	108.40	113.79	119.84	123.15	127.31	139.30	153.87	165.52

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 11.00%

CONCRETE

MATERIAL WEIGHT IN CONCRETE CATEGORY:

STEEL

MATERIAL WEIGHT IN STEEL CATEGORY:

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATEGORY:

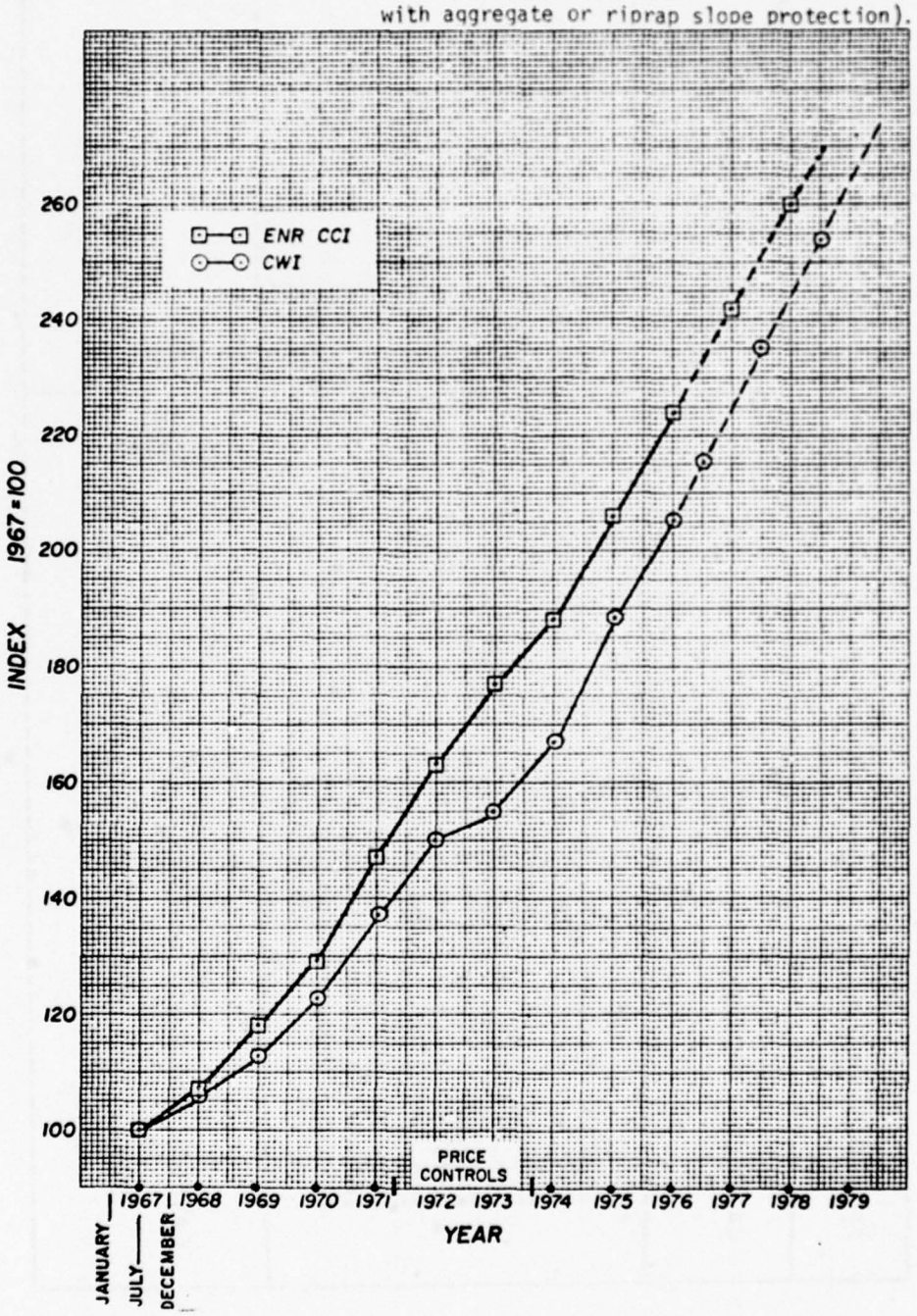
11A LEVEES AND FLOODWALLS (BASED ON ESTIMATES FOR LEVEES WITH HEAPED EARTH WITH AGGREGATE OR RIPRAP SLOPE PROTECTION).

LEVEES GROUP A

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	N	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.53	136.27	151.92	171.57	178.43	188.24	209.41	216.00					
CEMENT MASON	100.00	104.95	115.93	133.36	152.48	171.29	177.23	187.13	207.92	211.00					
ELECTRICIAN	100.00	106.25	115.10	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	160.47	177.48	185.59	207.93	216.00					
LABORER	100.00	106.49	118.19	129.87	157.14	177.92	183.12	185.71	216.36	225.00	25.00				
OPERATOR	100.00	105.61	[illegible]	128.41	147.29	165.98	172.52	178.88	185.05	206.17	61.00				
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	150.13	176.52	181.74	184.21	210.10	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.19	156.96	170.89	175.95	179.75	196.20	217.72	12.00				
OTHER	100.00	106.80	117.48	133.00	154.17	173.79	177.67	189.32	209.13	217.00	3.00				
PLANT TYPE															
COMPRESSOR	100.00	97.00	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00					
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	66.00				
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.80	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.26	[illegible]	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADER	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	1.00				
SPECIAL MACH	100.00	105.20	[illegible]	117.70	125.10	129.00	134.10	151.30	189.40	205.30					
TRACTOR	100.00	106.90	[illegible]	117.00	122.30	127.00	134.50	154.70	188.30	203.80	14.00				
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	204.20	15.00				
WELDING EQUIP	100.00	102.10	105.90	110.70	114.90	120.60	125.10	157.30	192.40	195.20					
OTHER	100.00	105.70	110.60	115.90	121.40	125.70	130.70	152.30	185.20	199.80	4.00				
MATERIAL TYPE															
CEMENT	100.00	102.70	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70					
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.65					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.36	177.98	[illegible]					
FABRICATD MET	100.00	102.20	105.90	112.00	110.20	122.40	127.44	161.23	189.03	194.20					
LUMBER	100.00	120.50	134.10	113.10	141.00	167.70	214.29	211.44	200.60	263.70					
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10					
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.05	201.48	199.21	183.60					
AGGREGATE	100.00	103.80	107.80	113.50	110.10	121.70	124.96	135.17	151.08	162.50	91.00				
STEEL PLATES	100.00	102.90	108.30	115.10	120.60	137.60	142.80	174.88	203.75	209.70					
MATTRESS	100.00	108.51	119.60	125.03	142.85	159.97	176.28	188.22	196.42	212.58	3.00				
OTHER	100.00	105.60	111.90	112.50	110.50	126.60	138.50	160.90	174.00	187.70	6.00				

11A LEVEES AND FLOODWALLS (Based on estimates for levees with heaped earth with aggregate or riprap slope protection).



11B LEVEES AND FLOODWALLS (Based on combination of levees and floodwalls that have structural concrete work, including walls or slope protection).

FEATURE: 11 LEVEES & FLOODWALLS GROUP B

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00				1967	100.00
105.14	103.56	102.65				1968	105.14
111.63	111.79	107.29				1969	111.63
118.74	118.24	114.46				1970	118.74
127.48	131.51	124.11				1971	127.48
137.06	141.36	130.13				1972	137.06
142.97	149.06	135.73				1973	142.97
162.55	170.45	168.28				1974	162.55
188.61	195.59	194.41				1975	190.18
205.55	209.11	199.84				1976	205.55

CATEGORY WEIGHT					
E	C	S	M	L	B
77.13	14.00	8.87			

11B LEVEES AND FLOODWALLS (Based on combination of levees and floodwalls that have structural concrete work, including walls or slope protection).

***11 LEVEES GROUP B

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.45	114.68	129.32	151.81	170.54	176.55	181.03	198.61	214.31

LABOR WEIGHT IN EARTHWORK CATAGORY: 22.79%

CONCRETE

100.00	105.80	118.57	133.04	153.65	171.24	178.52	184.13	207.56	215.95

LABOR WEIGHT IN CONCRETE CATAGORY: 24.19%

STEEL

100.00	104.24	114.35	113.44	153.89	169.01	177.55	185.32	207.44	213.86

LABOR WEIGHT IN STEEL CATAGORY: 7.60%

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATEGORY: . . . . . .

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATEGORY: . . . . . .

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.38	110.47	114.50	119.84	127.08	132.34	154.53	149.53	203.91

PLANT WEIGHT IN EARTHWORK CATAGORY: 74.14%

CONCRETE

100.00	103.75	106.20	111.33	115.40	119.04	123.35	141.23	170.01	142.27

PLANT WEIGHT IN CONCRETE CATAGORY: 9.34%

STEEL

100.00	104.55	108.70	114.63	119.55	125.71	130.02	153.18	186.42	200.52

PLANT WEIGHT IN STEEL CATAGORY: 1.15%

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATEGORY . . . . . .

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATEGORY: . . . . . .

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.43	112.64	113.46	120.11	130.26	141.25	150.46	162.37	179.67

MATERIAL WEIGHT IN EARTHWORK CATAGORY: 3.92%

CONCRETE

100.00	102.69	108.32	113.29	124.93	132.53	140.91	165.41	194.57	210.36

MATERIAL WEIGHT IN CONCRETE CATAGORY: 86.63%

STEEL

100.00	102.33	104.52	112.46	121.69	124.95	132.32	167.06	193.43	198.73

MATERIAL WEIGHT IN STEEL CATAGORY: 9.45%

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATEGORY: . . . . . .

ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: . . . . . .

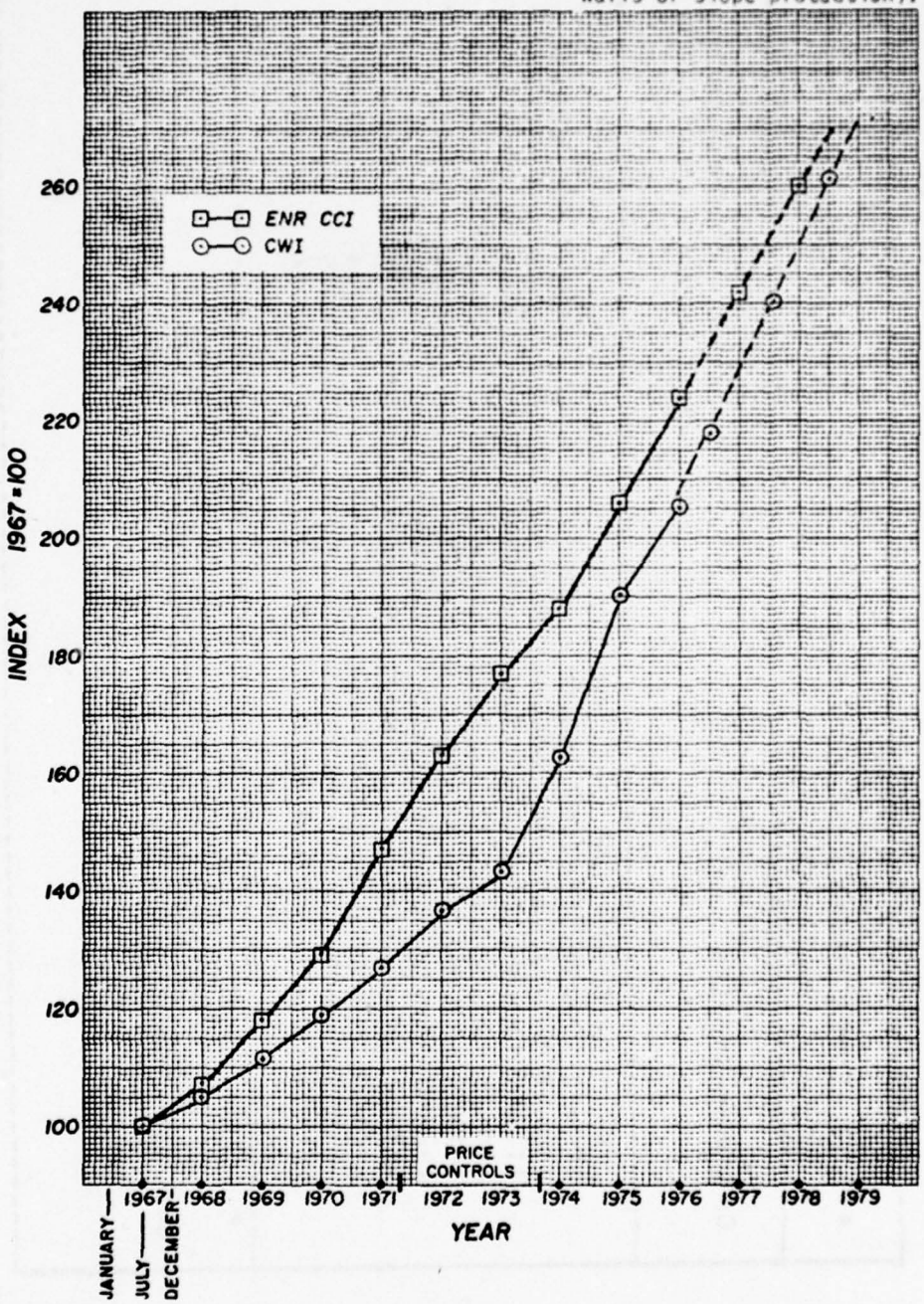
11b LEVEES AND FLOODWALLS (BASED ON COMBINATION OF LEVEES AND FLOODWALLS THAT HAVE STRUCTURAL CONCRETE WORK, INCLUDING WALLS OR SLOPE PROTECTION).

LEVEES AND FLOODWALLS GROUP B

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.08		40.41	1.34		
CEMENT MASON	100.00	104.95	116.81	133.36	152.48	171.29	177.23	187.13	207.92	211.00		20.47			
ELECTRICIAN	100.00	106.25	115.18	133.93	154.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	214.00			[illegible]		
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	181.12	185.71	216.36	225.00	29.03	23.24	[illegible]		
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	47.24	11.[illegible]	[illegible]		
PAINTER	100.00	104.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	104.96	120.00	134.78	159.13	176.52	181.74	184.21	210.18	214.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	194.20	217.72	24.68	2.14			
OTHER	100.00	104.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	.21	1.[illegible]	1.82		
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00		22.[illegible]			
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	25.48	12.[illegible]	76.40		
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		5.[illegible]			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	4.19				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	1.80	13.78	1.12		
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	40.57	8.[illegible]			
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	26.15	5.41	[illegible]		
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20	1.48		11.[illegible]		
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80		33.04	2.25		
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70	2.46	63.09			
ELECTRICAL	100.00	102.70	104.40	110.10	117.10	112.90	116.46	137.80	166.24	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			60.38		
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70	17.51	4.32			
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	136.17	170.03	195.60	210.10	3.25		3.60		
PEMAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60		6.55	3.85		
AGGREGATE	100.00	103.40	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	76.05				
STEEL PLATES	100.00	102.90	108.30	115.10	120.60	137.60	142.80	174.88	203.75	209.70		19.34	29.44		
OTHER	100.00	105.60	111.90	112.50	119.50	120.60	130.50	160.90	174.80	187.70	.78	4.24	2.39		

11B LEVEES AND FLOODWALLS (Based on combinations of levees and floodwalls that have structural concrete work, including walls or slope protection).



11C LEVEES AND FLOODWALLS (Based on estimates that have levees, floodwalls, and floodgates and contain all five categories of work).

*** 11 LEVEES AND FLOODWALLS GROUP C

CATEGORY INDICES

E	C	S	M	L	H
100.00	100.00	100.00	100.00	100.00	
105.69	105.51	102.90	105.95	104.88	
113.14	113.65	108.40	113.51	111.05	
120.78	123.82	117.32	121.53	123.05	
131.89	137.64	129.49	133.08	137.04	
142.95	149.74	144.41	144.45	147.49	
148.42	156.28	143.47	176.55	152.43	
162.22	174.276	174.81	186.22	165.00	
185.73	194.06	197.82	194.88	189.60	
201.98	204.91	206.33	207.27	196.49	

CATEGORY WEIGHT

E	C	S	M	L	H
35.79	19.78	36.28	6.61	1.55	

FEATURE INDEX

YEAR	
1967	100.00
1968	104.67
1969	111.52
1970	120.22
1971	132.44
1972	145.01
1973	150.11
1974	170.81
1975	192.45
1976	204.42

11C LEVEES AND FLOODWALLS (Based on estimates that have levees, floodwalls, and floodgates and contain all five categories of work).

***11 LEVEES AND FLOODWALLS GROUP C

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.43	114.71	124.12	151.45	170.45	176.30	181.31	196.67	213.83

LABOR WEIGHT IN EARTHWORK CATEGORY: 37.25%

CONCRETE

100.00	105.81	118.38	133.44	153.40	171.72	178.08	188.75	206.34	215.37

LABOR WEIGHT IN CONCRETE CATEGORY: 51.07 %

STEEL

100.00	104.41	115.45	132.23	153.75	200.39	177.70	184.55	205.45	214.36

LABOR WEIGHT IN STEEL CATEGORY: 21.78%

MECHANICAL

100.00	104.84	118.55	133.40	155.73	173.45	179.52	186.03	207.65	215.77

LABOR WEIGHT IN MECHANICAL CATEGORY: 34.00%

ELECTRICAL

100.00	106.50	116.00	132.91	154.40	173.49	179.82	185.35	206.75	215.80

LABOR WEIGHT IN ELECTRICAL CATEGORY: 56.00%

PLANT

EARTHWORK

100.00	105.34	110.45	114.43	119.75	126.42	131.94	153.83	188.77	203.49

PLANT WEIGHT IN EARTHWORK CATEGORY: 44.80%

CONCRETE

100.00	110.69	107.90	113.59	117.79	122.47	127.08	147.39	177.76	191.54

PLANT WEIGHT IN CONCRETE CATEGORY: 11.66%

STEEL

100.00	104.52	109.83	114.49	119.97	125.79	129.91	153.24	187.02	200.54

PLANT WEIGHT STEEL CATEGORY: 5.22%

MECHANICAL

100.00	104.56	109.05	115.24	119.74	126.30	129.33	153.38	187.31	201.70

PLANT WEIGHT IN MECHANICAL CATEGORY: 7.00%

ELECTRICAL

100.00	104.23	110.20	118.18	115.42	129.22	131.48	156.71	196.56	208.04

PLANT WEIGHT IN ELECTRICAL CATEGORY: 2.00%

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.93	112.74	113.58	120.68	125.17	131.68	142.24	158.25	169.91

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 15.00%

CONCRETE

100.00	103.47	109.37	113.23	123.24	124.10	135.52	162.83	182.32	194.77

MATERIAL WEIGHT IN CONCRETE CATEGORY: 37.27%

STEEL

100.00	101.72	106.12	113.04	123.60	129.04	134.23	173.45	196.32	203.76

MATERIAL WEIGHT IN STEEL CATEGORY: 23.00%

MECHANICAL

100.00	103.84	109.28	113.40	121.23	128.24	177.44	186.71	185.28	199.08

MATERIAL WEIGHT IN MECHANICAL CATEGORY: 20.00%

ELECTRICAL

100.00	102.74	104.50	110.15	112.25	113.17	114.90	118.26	164.41	170.20

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: 42.00%

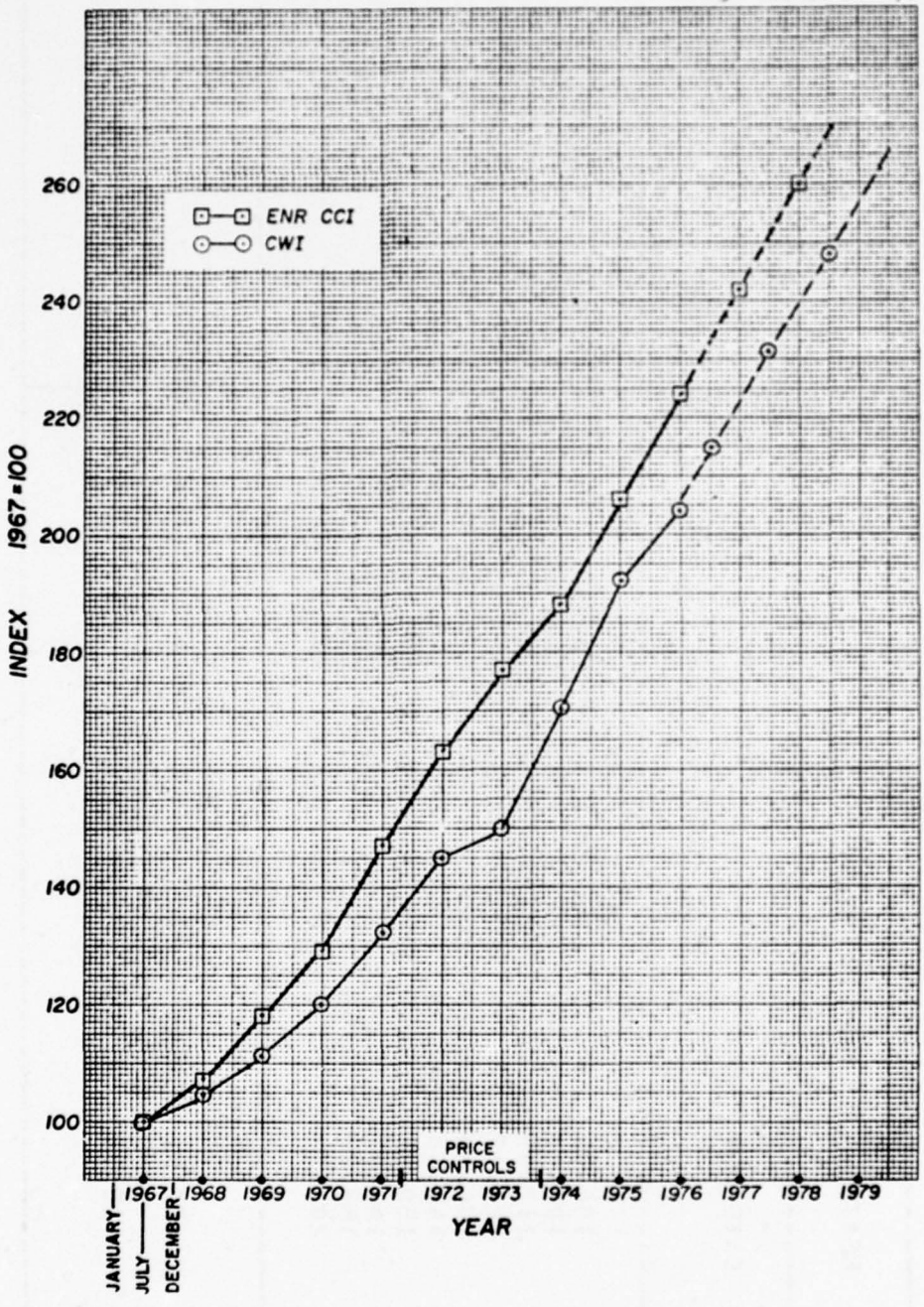
11C LEVEES AND FLOODWALLS (based on estimates that have levees, floodwalls, and floodgates and contain all five categories of work).

11 LEVEES AND FLOODWALLS GROUP C

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	151.92	171.57	178.43	188.24	209.41	216.00	.18	39.65	1.77	14.99	2.00
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00	.38	18.94		.48	
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00				6.47	69.00
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	214.00	.18	4.31	51.16	9.11	
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	28.65	14.80	18.27	11.25	14.00
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	51.48	14.43	15.12	10.69	
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11		.03	1.49	2.35	
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	214.00	.04			25.21	
TRUCK DRIVER	100.00	108.86	116.46	130.38	154.96	170.89	175.95	179.75	196.20	217.72	16.48	3.77	5.90	3.34	8.00
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	2.57	.04	6.29	16.44	2.00
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	.99	9.92	61.75	.96	
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	23.39	37.59		64.86	
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70	.05	7.09	.60		
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	.01			.74	
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	2.21	.39			
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	5.36	1.76		.19	
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	30.13	.07			
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.40	196.80	208.20	26.83	11.72	17.83	25.48	98.00
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20	.02		10.23	5.03	
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	10.99	31.45	9.58	3.34	2.00
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70	.06	27.49		.18	
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85				2.67	98.00
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	184.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			9.76		
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70	5.87	1.58	.18		
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	218.10	.88	7.88	47.53	52.12	
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60	.89	9.06	12.33		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	85.84	19.31	.83		
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.80	203.75	209.70		10.25	27.98	.64	
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	130.50	160.90	174.00	187.70	6.06	24.45	1.68	44.39	2.00

11C LEVEES AND FLOODWALLS (Based on estimates that have levees, floodwalls and floodgates and contain all five categories of work).



FEATURE: 13 PUMPING PLANTS'

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00	100.00	100.00	100.00	1967	100.00
105.62	104.85	103.36	105.38	104.45	107.29	1968	104.83
112.95	113.14	109.06	113.14	109.67	117.56	1969	112.17
121.12	122.08	116.69	119.30	120.63	124.40	1970	119.75
134.00	136.13	127.43	130.22	131.82	141.07	1971	131.73
145.18	147.53	136.08	140.26	140.31	155.95	1972	141.94
150.94	155.59	141.19	149.36	145.08	169.35	1973	149.36
163.97	176.82	171.46	168.56	160.01	179.17	1974	170.45
188.28	194.96	195.71	185.59	184.91	194.35	1975	190.49
202.77	205.31	208.70	198.00	191.09	212.05	1976	202.61

CATEGORY WEIGHT					
E	C	S	M	L	B
13.58	25.56	21.06	36.64	2.87	.29

13 PUMPING PLANTS

*** 13 PUMPING PLANTS

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.37	117.07	129.64	152.98	172.21	177.89	182.57	201.40	216.28

LABOR WEIGHT IN EARTHWORK CATEGORY: 41.15%

CONCRETE

100.00	105.92	117.87	132.94	149.00	170.91	177.34	184.49	204.68	214.74

LABOR WEIGHT IN CONCRETE CATEGORY: 40.77%

STEEL

100.00	106.34	116.97	131.54	153.30	170.75	177.42	183.94	203.23	215.42

LABOR WEIGHT IN STEEL CATEGORY: 15.25%

MECHANICAL

100.00	106.12	118.18	133.93	153.97	171.37	177.93	185.90	205.68	214.78

LABOR WEIGHT IN MECHANICAL CATEGORY: 38.42%

ELECTRICAL

100.00	105.38	115.42	131.47	154.20	173.56	179.52	185.61	206.08	214.34

LABOR WEIGHT IN ELECTRICAL CATEGORY: 43.66%

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.29	110.24	116.35	121.09	126.38	132.04	152.48	187.26	202.34

PLANT WEIGHT IN EARTHWORK CATEGORY: 39.04%

CONCRETE

100.00	104.56	108.45	114.61	119.14	124.69	129.73	148.45	178.19	191.91

PLANT WEIGHT IN CONCRETE CATEGORY: 14.33%

STEEL

100.00	104.69	108.42	114.65	119.72	124.87	129.81	150.49	183.54	198.63

PLANT WEIGHT IN STEEL CATEGORY: 6.18%

MECHANICAL

100.00	104.97	109.47	115.39	120.04	126.24	130.58	152.91	186.31	201.74

PLANT WEIGHT IN MECHANICAL CATEGORY: 5.07%

ELECTRICAL

100.00	104.94	110.30	117.08	119.24	127.54	131.11	154.60	191.13	204.09

PLANT WEIGHT IN ELECTRICAL CATEGORY: 3.39%

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.48	109.79	113.18	122.04	124.45	132.22	147.95	163.00	175.59

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 14.41%

CONCRETE

100.00	103.67	109.18	113.14	122.19	127.44	132.07	177.30	189.70	198.92

MATERIAL WEIGHT IN CONCRETE CATEGORY: 34.40%

STEEL

100.00	102.45	107.59	113.38	122.04	130.23	135.11	170.45	195.22	204.14

MATERIAL WEIGHT IN STEEL CATEGORY: 34.97%

MECHANICAL

100.00	105.04	111.22	113.55	119.84	126.36	137.06	161.43	176.81	189.60

MATERIAL WEIGHT IN MECHANICAL CATEGORY: 14.01%

ELECTRICAL

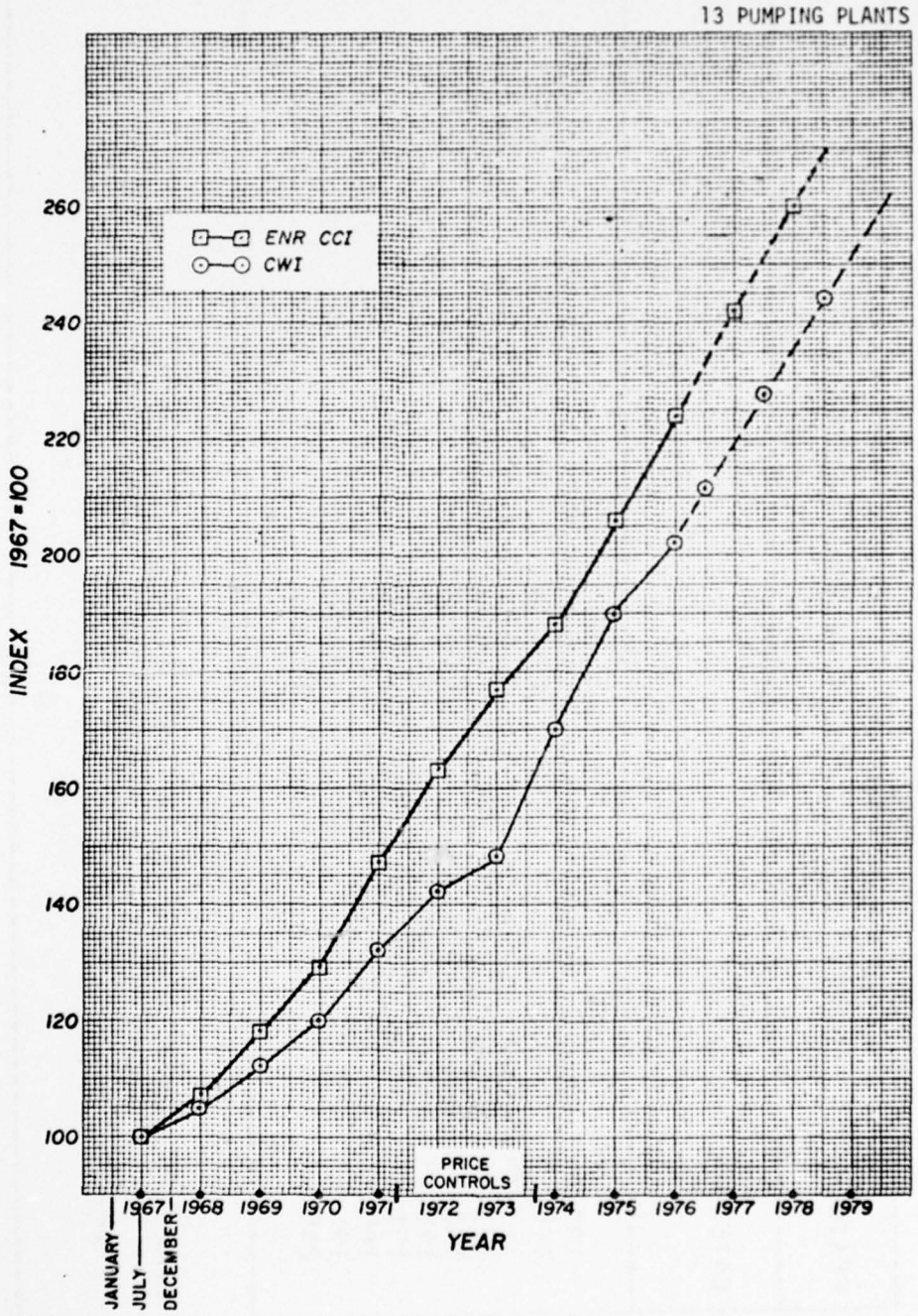
100.00	102.60	104.71	112.24	112.55	113.08	117.53	139.33	164.94	170.93

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: 2.21%

13 PUMPING PLANTS

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	151.92	171.57	178.43	188.24	209.41	216.08		29.71	1.24	36.38	
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		14.81		1.77	
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00				10.15	82.91
IRON WORKER	100.00	106.31	116.22	134.23	154.95	168.47	177.48	185.59	207.93	214.00		14.38	32.54	15.85	
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	181.12	185.71	216.36	225.00	45.27	15.89	19.34	2.94	7.66
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	40.96	20.63	25.88	12.59	
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00			3.91	8.79	
TRUCK DRIVER	100.00	108.86	116.46	130.38	154.96	170.89	175.95	179.75	196.20	217.72	9.86	4.38	5.61	1.75	2.65
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	184.32	209.13	217.00	4.72	.28	11.52	9.86	7.18
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	91.80	92.00	93.50	102.80	116.30	120.00		5.31	4.19		
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	23.96	45.86	62.28	57.65	
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		18.51			
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	2.95				
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	1.14				
SPECIAL MACH	100.00	105.20	110.20	117.70	126.10	129.00	134.10	151.30	189.40	205.30	25.70	1.94			
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	20.20				
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	14.23	12.65	14.48	12.82	51.14
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20			1.91	1.98	
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	11.81	14.73	17.21	27.55	48.86
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70		24.29	3.38		
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					95.38
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	184.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			7.36	11.05	
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70	1.54	8.06	1.17		
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	1.10	7.82	75.84	5.28	
PERAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60		38.19	3.03		
AGGREGATE	100.00	103.40	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	55.86	3.57			
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70	3.97		8.78		1.17
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	37.52	24.07	2.53	83.68	3.45


13 PUMPING PLANTS
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
YEAR
JANUARY
JULY
DECEMBER

FEATURE: 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES

CATEGORY INDICES

E	C	S	M	L	B	YEAR	FEATURE INDEX
100.00	100.00	100.00	100.00	100.00		1967	100.00
105.54	105.62	102.52	103.51	104.34		1968	104.72
112.75	114.74	107.15	109.40	109.41		1969	112.28
121.08	121.74	116.73	116.23	123.48		1970	120.22
133.72	135.70	127.11	123.69	130.78		1971	132.70
145.05	149.21	132.79	128.76	138.57		1972	143.52
151.47	157.19	139.60	133.83	143.61		1973	150.83
165.30	170.91	178.94	157.56	158.88		1974	171.27
190.57	193.31	196.74	191.18	184.10		1975	193.50
205.47	208.66	198.93	204.47	190.11		1976	205.30

CATEGORY WEIGHT

E	C	S	M	L	B
12.68	56.26	24.32	4.61	2.13	

15 FLOODWAY CONTROL AND DIVERSION STRUCTURES

*** 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.43	114.93	129.29	152.78	171.68	177.46	181.47	199.76	215.69

LABOR WEIGHT IN EARTHWORK CATEGORY: 43.97%

CONCRETE

100.00	106.03	118.42	132.35	153.93	172.68	178.71	185.43	206.96	216.86

LABOR WEIGHT IN CONCRETE CATEGORY: 41.70%

STEEL

100.00	106.40	114.32	133.03	153.79	169.22	177.38	184.79	206.08	215.39

LABOR WEIGHT IN STEEL CATEGORY: 23.42%

MECHANICAL

100.00	104.51	117.33	131.94	154.92	172.69	178.91	184.43	206.48	216.98

LABOR WEIGHT IN MECHANICAL CATEGORY: 8.10%

ELECTRICAL

100.00	106.36	115.57	133.91	155.71	171.88	178.82	185.47	205.71	214.02

LABOR WEIGHT IN ELECTRICAL CATEGORY: 42.24%

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.14	109.89	115.27	118.86	124.67	132.04	153.96	188.19	202.99

PLANT WEIGHT IN EARTHWORK CATEGORY: 44.57%

CONCRETE

100.00	104.41	108.44	115.21	117.93	125.22	128.86	149.33	179.37	191.60

PLANT WEIGHT IN CONCRETE CATEGORY: 16.49%

STEEL

100.00	104.85	109.71	114.03	118.96	126.97	131.04	154.05	188.98	203.40

PLANT WEIGHT IN STEEL CATEGORY: 3.94%

MECHANICAL

100.00	104.75	109.44	115.74	119.09	126.60	130.56	153.61	187.99	201.99

PLANT WEIGHT IN MECHANICAL CATEGORY: 2.36%

ELECTRICAL

100.00	104.45	110.10	117.69	116.55	128.55	131.31	155.61	194.20	206.58

PLANT WEIGHT IN ELECTRICAL CATEGORY: 3.87%

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.47	107.46	112.14	118.35	122.08	127.35	145.84	164.53	175.88

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 11.44%

CONCRETE

100.00	105.49	113.45	113.74	125.80	135.26	144.91	164.96	185.20	207.22

MATERIAL WEIGHT IN CONCRETE CATEGORY: 41.41%

STEEL

100.00	101.12	103.99	111.34	118.75	121.10	127.41	178.37	194.07	193.26

MATERIAL WEIGHT IN STEEL CATEGORY: 72.24%

MECHANICAL

100.00	103.20	108.59	114.42	120.99	124.44	129.94	155.23	189.84	203.39

MATERIAL WEIGHT IN MECHANICAL CATEGORY: 84.54%

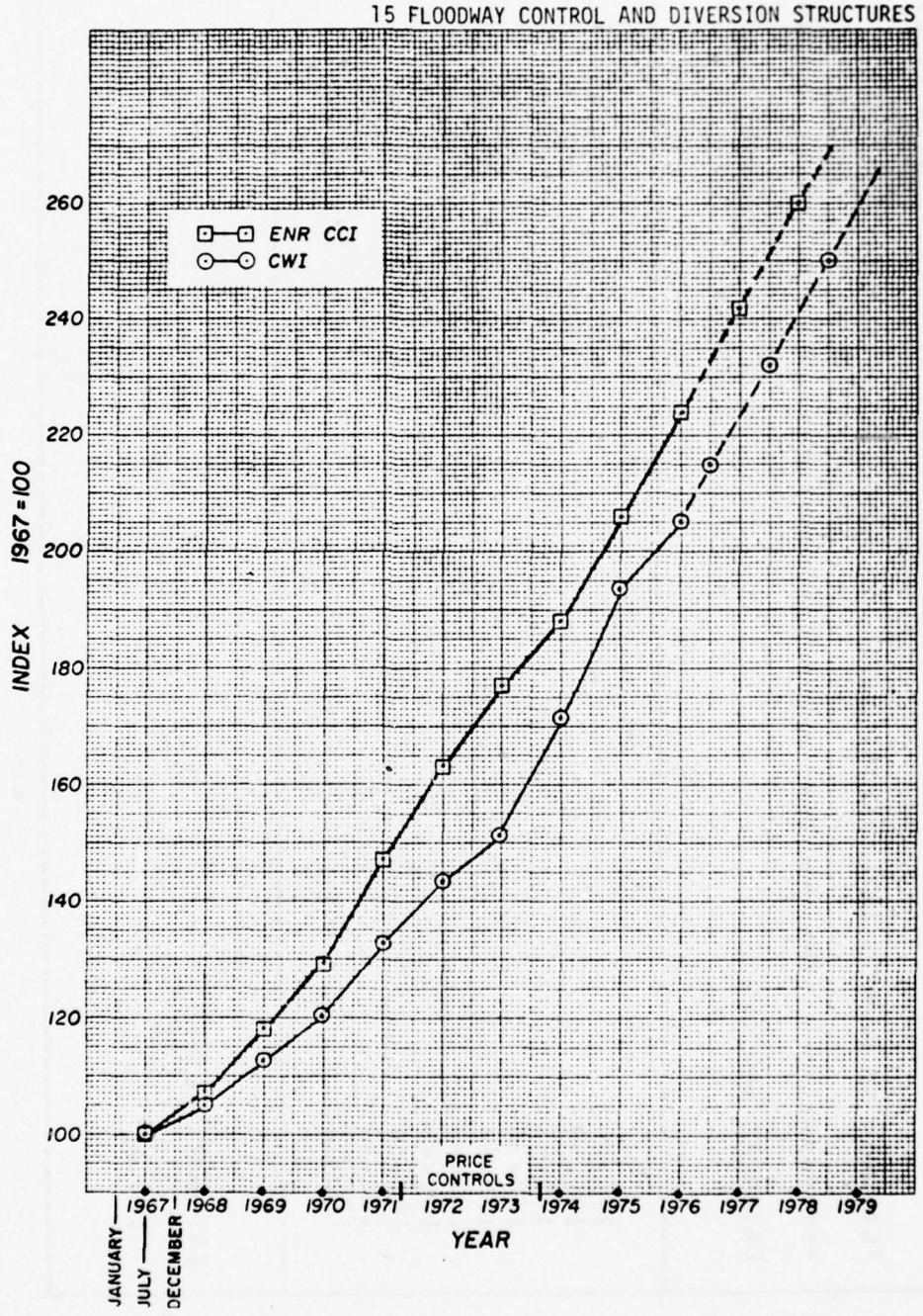
ELECTRICAL

100.00	102.75	106.53	110.14	112.24	113.14	114.85	138.21	166.40	170.16

MATERIAL WEIGHT IN ELECTRICAL CATEGORY: 59.45%

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
LABOR TYPE															
CARPENTER	100.00	105.68	120.59	136.27	153.92	171.57	178.43	188.24	209.41	216.00		35.13			
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		11.37			
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00				4.47	68.05
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	216.00			73.78	23.05	27.51
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	42.03	31.45	7.81	26.30	
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	195.05	206.17	44.07	15.35	8.83	14.77	
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11			3.44	1.42	
PLUMBER	100.00	106.96	120.00	134.78	159.13	176.52	181.74	184.21	210.10	216.00				15.75	1.30
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	13.90	5.58	4.72	5.19	3.14
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00		1.12	1.22	8.45	
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00	4.00	4.92			
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	2.53	30.32	47.31	46.33	9.70
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		21.75		1.13	
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20	3.04	1.96			
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	36.34				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	4.12				
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	27.08	3.65	8.46		
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	18.91	32.54	32.31	27.12	78.36
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	197.40	185.20			2.64	4.52	
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	3.99	4.86	9.23	20.90	11.94
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.10	161.93	193.29	214.70		51.66			
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85	5.45				98.23
EXPLOSIVES	100.00	101.40	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70	14.29				
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20			40.81		
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70		16.18			
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10	9.55	7.93	19.96	18.02	
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	193.60			38.20		
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	50.97	20.85			
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70					
MACHINERY	100.00	103.35	108.99	114.93	120.55	123.61	128.88	151.98	188.62	201.91				41.98	
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.00	187.70	14.74	3.38	1.03		1.77


15 FLOODWAY CONTROL AND DIVERSION STRUCTURES
ENR CCI
CWI
INDEX 1967=100
260
240
220
200
180
160
140
120
100
PRICE CONTROLS
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
YEAR
JANUARY
JULY
DECEMBER

16A BANK STABILIZATION (Based on estimates with only earthwork category).

FEATURE: 16 BANK STABILIZATION A

CATEGORY INDICES

E	C	S	M	L	B
100.00					
104.99					
110.91					
118.50					
126.54					
136.43					
140.85					
162.60					
173.12					
187.41					

YEAR	FEATURE INDEX
1967	100.00
1968	104.99
1969	110.91
1970	118.50
1971	126.54
1972	136.43
1973	140.85
1974	162.60
1975	173.12
1976	187.41

CATEGORY WEIGHT

E	C	S	M	L	B
100.00					

16A BANK STABILIZATION (BASED ON ESTIMATES WITH ONLY EARTHWORK CATEGORY)

*** 16 BANK STABILIZATION A
LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.69	116.54	129.29	151.95	169.77	175.62	180.59	194.56	213.08

LABOR WEIGHT IN EARTHWORK CATEGORY: 27.15%

CONCRETE

LABOR WEIGHT IN CONCRETE CATEGORY:

STEEL

LABOR WEIGHT IN STEEL CATEGORY:

MECHANICAL

LABOR WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

LABOR WEIGHT IN ELECTRICAL CATEGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.29	110.45	116.50	119.68	127.78	131.95	154.40	189.36	204.10

PLANT WEIGHT IN EARTHWORK CATEGORY: 24.53%

CONCRETE

PLANT WEIGHT IN CONCRETE CATEGORY:

STEEL

PLANT WEIGHT IN STEEL CATEGORY:

MECHANICAL

PLANT WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

PLANT WEIGHT IN ELECTRICAL CATEGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	103.87	107.99	113.46	115.75	122.10	125.82	156.66	152.84	164.51

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 48.32%

CONCRETE

MATERIAL WEIGHT IN CONCRETE CATEGORY:

STEEL

MATERIAL WEIGHT IN STEEL CATEGORY:

MECHANICAL

MATERIAL WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

MATERIAL WEIGHT IN ELECTRICAL CATEGORY:

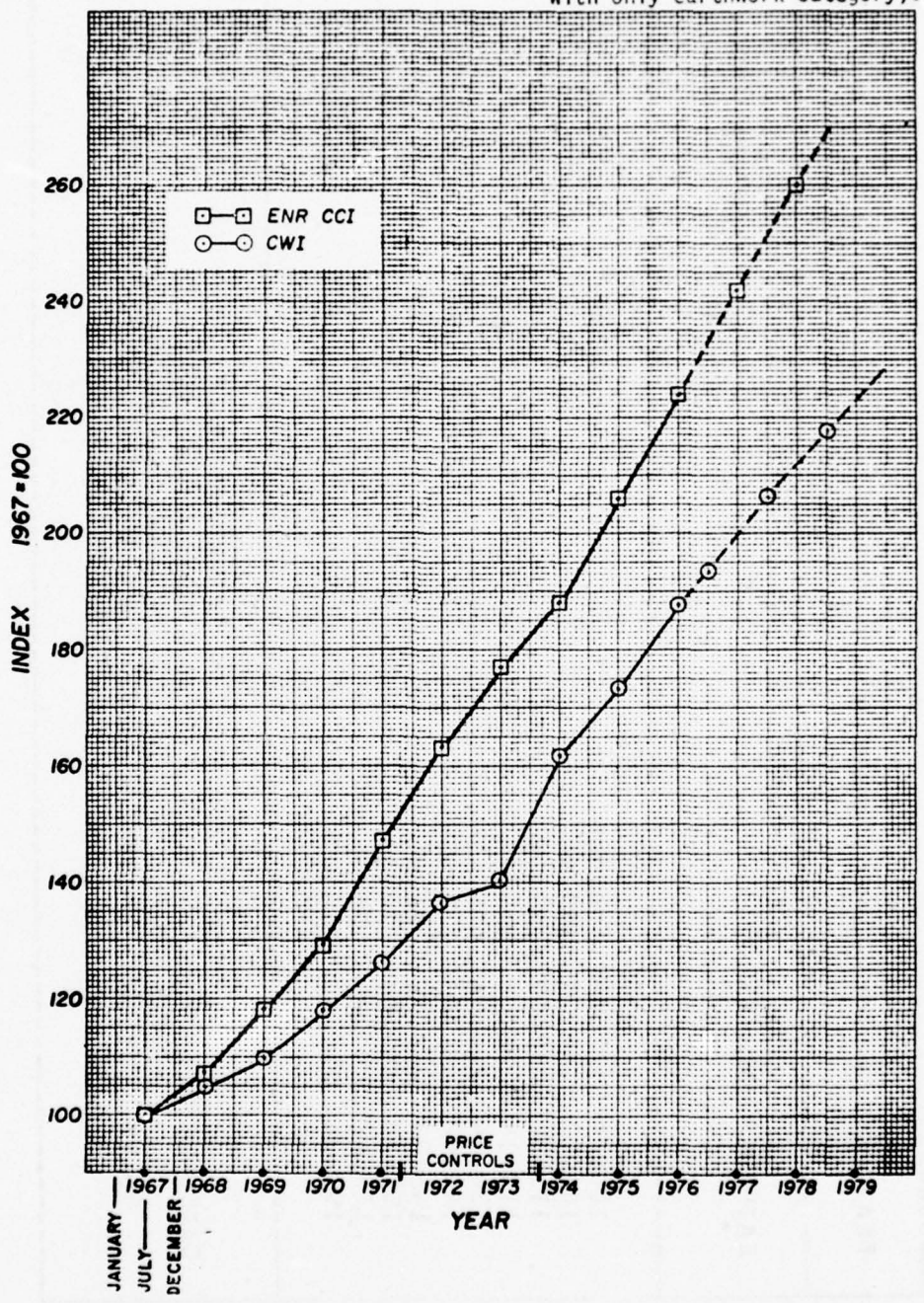
16A BANK STABILIZATION (BASED ON ESTIMATES WITH ONLY EARTHWORK CATEGORY).

16A BANK STABILIZATION A

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR														
LABOR TYPE	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	M	L
CARPENTER	100.00	105.68	120.59	136.27	151.92	171.57	178.43	188.24	209.41	216.00					
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00					
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00					
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	214.00					
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	19.91				
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	52.14				
PAINTER	100.00	106.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11					
PLUMBER	100.00	106.96	120.00	136.78	159.13	176.52	181.74	184.21	210.10	216.00					
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.20	217.72	26.05				
OTHER	100.00	106.80	117.48	133.00	154.37	173.79	177.67	189.32	209.13	217.00	1.00				
PLANT TYPE															
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00					
CRANE	100.00	104.90	109.00	114.70	120.60	126.00	130.50	152.20	184.30	201.80	25.13				
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20					
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.60	2.92				
SPECIAL MACH	100.00	105.20	110.20	117.70	125.10	129.00	134.10	151.30	189.40	205.30	1.32				
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	23.13				
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	28.65				
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	185.20					
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	18.85				
MATERIAL TYPE															
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.18	161.93	193.29	214.70	1.46				
ELECTRICAL	100.00	102.70	104.40	110.10	112.10	112.90	116.46	137.80	166.26	169.85					
EXPLOSIVES	100.00	101.60	104.10	106.10	113.30	115.20	120.09	149.96	177.98	186.70					
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20					
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70					
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.00	134.17	170.03	195.60	210.10					
REBAR	100.00	99.10	100.00	109.20	117.10	114.70	124.06	201.48	199.21	183.60					
AGGREGATE	100.00	103.80	107.80	113.50	119.10	121.70	124.96	135.17	151.08	162.50	93.64				
STEEL PLATES	100.00	102.90	108.30	115.10	129.60	137.00	142.88	174.88	203.75	209.70					
OTHER	100.00	105.60	111.90	112.50	119.50	126.00	130.50	160.90	174.00	187.70	4.90				

16A BANK STABILIZATION (Based on estimates with only earthwork category).



16B BANK STABILIZATION (Based on estimates with large amount of riprap protection and major drainage systems).

FEATURE: 16 BANK STABILIZATION B

CATEGORY INDICES						YEAR	FEATURE INDEX
E	C	S	M	L	B		
100.00	100.00	100.00				1967	100.00
105.18	106.79	102.75				1968	105.17
111.82	117.93	107.90				1969	111.90
119.15	125.96	115.28				1970	119.23
130.84	144.96	124.45				1971	131.04
140.02	161.98	132.55				1972	140.36
145.23	172.72	136.44				1973	145.66
157.28	183.58	170.35				1974	157.96
179.42	204.24	196.46				1975	180.13
192.84	217.43	210.57				1976	193.55

CATEGORY WEIGHT

E	C	S	M	L	B
96.75	1.98	1.27			

16A BANK STABILIZATION (BASED ON ESTIMATES WITH LARGE AMOUNTS OF RIPRAP SLOPE PROTECTION AND MAJOR DRAINAGE SYSTEMS).

*** 16 BANK STABILIZATION M

LABOR

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	106.24	117.32	129.40	153.68	173.51	179.20	183.17	204.86	218.18

LABOR WEIGHT IN EARTHWORK CATEGORY: 32.16%

CONCRETE

100.00	105.56	117.49	132.71	153.93	173.10	179.02	186.62	209.86	215.86

LABOR WEIGHT IN CONCRETE CATEGORY: 61.87%

STEEL

100.00	104.41	117.40	131.61	155.90	174.14	180.84	184.67	213.00	221.40

LABOR WEIGHT IN STEEL CATEGORY: 5.05%

MECHANICAL

.	.	.	.	.	.	.	.	.	.

LABOR WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

.	.	.	.	.	.	.	.	.	.

LABOR WEIGHT IN ELECTRICAL CATEGORY:

PLANT

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	105.53	110.73	115.66	121.06	126.18	131.52	152.97	185.89	201.92

PLANT WEIGHT IN EARTHWORK CATEGORY: 26.80%

CONCRETE

100.00	105.32	110.05	116.13	120.61	126.31	130.77	152.26	184.47	198.41

PLANT WEIGHT IN CONCRETE CATEGORY: 7.10%

STEEL

100.00	104.45	110.23	117.82	116.32	128.70	131.37	156.05	194.86	206.80

PLANT WEIGHT IN STEEL CATEGORY: 3.03%

MECHANICAL

.	.	.	.	.	.	.	.	.	.

PLANT WEIGHT IN MECHANICAL CATEGORY

ELECTRICAL

.	.	.	.	.	.	.	.	.	.

PLANT WEIGHT IN ELECTRICAL CATEGORY:

MATERIAL

EARTHWORK

1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
100.00	104.11	108.51	113.33	119.17	122.55	127.29	139.60	155.03	166.83

MATERIAL WEIGHT IN EARTHWORK CATEGORY: 40.44%

CONCRETE

100.00	104.84	119.46	113.44	131.14	145.23	169.14	184.58	196.61	225.54

MATERIAL WEIGHT IN CONCRETE CATEGORY: 29.03%

STEEL

100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10

MATERIAL WEIGHT IN STEEL CATEGORY: 91.92%

MECHANICAL

.	.	.	.	.	.	.	.	.	.

MATERIAL WEIGHT IN MECHANICAL CATEGORY:

ELECTRICAL

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MATERIAL WEIGHT IN ELECTRICAL CATEGORY:

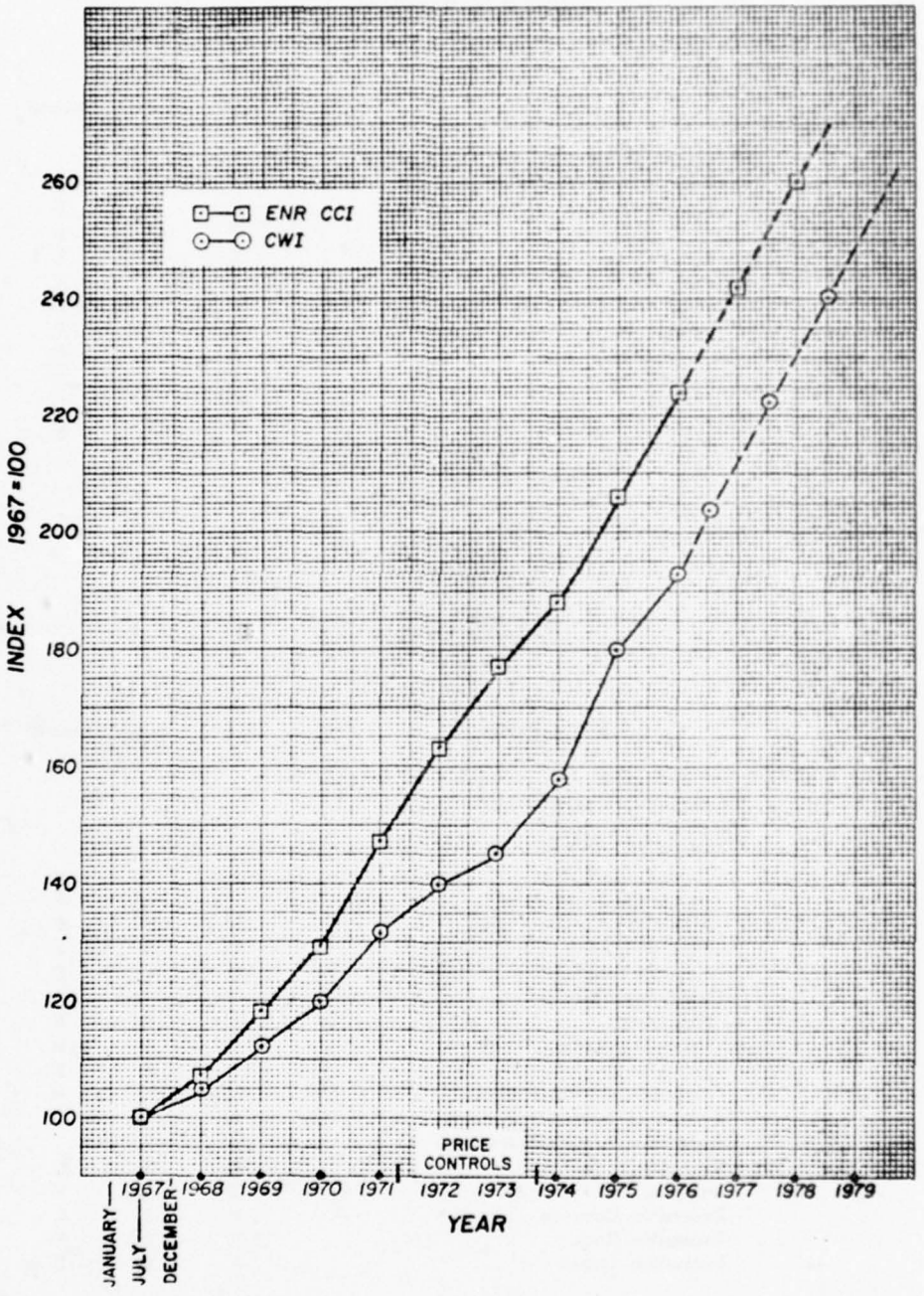
16A BANK STABILIZATION (BASED ON ESTIMATES WITH LARGE AMOUNTS OF RIPRAP SLOPE PROTECTION AND MAJOR DRAINAGE SYSTEMS).

16 BANK STABILIZATION B

RESOURCE TYPE INDICES AND WEIGHTS

RESOURCES	YEAR																
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	E	C	S	W	L		
LABOR TYPE																	
CARPENTER	100.00	105.68	120.59	130.27	153.92	171.57	178.43	188.24	209.41	216.00		19.69					
CEMENT MASON	100.00	104.95	116.83	133.36	152.48	171.29	177.23	187.13	207.92	211.00		48.48					
ELECTRICIAN	100.00	106.25	115.18	133.93	156.25	173.21	179.46	185.71	205.18	213.00							
IRON WORKER	100.00	106.31	116.22	134.23	154.05	168.47	177.48	185.59	207.93	214.00					40.00		
LABORER	100.00	106.49	118.18	129.87	157.14	177.92	183.12	185.71	216.36	225.00	61.91	79.29			40.00		
OPERATOR	100.00	105.61	115.89	128.41	147.29	165.98	172.52	178.88	185.05	206.17	34.95	3.54					
PAINTER	100.00	104.31	114.74	130.53	152.63	169.47	176.84	186.09	209.22	218.11							
PLUMBER	100.00	104.96	120.00	134.78	150.13	176.52	181.74	184.21	210.18	214.00							
TRUCK DRIVER	100.00	108.86	116.46	130.38	156.96	170.89	175.95	179.75	196.26	217.72	3.14						
OTHER	100.00	106.80	117.48	131.00	154.37	173.79	177.67	189.32	209.13	217.00							
PLANT TYPE																	
COMPRESSOR	100.00	97.80	92.00	93.80	93.80	92.00	93.50	102.80	116.30	120.00							
CRANE	100.00	104.90	109.00	114.70	126.60	126.00	130.50	152.20	184.30	201.80	44.23	13.64					
MIXERS,PAVERS	100.00	104.90	108.80	116.60	122.90	126.30	130.40	145.10	161.00	168.70		9.09					
ROCK DRILLS	100.00	103.20	104.90	107.30	109.20	112.40	116.50	127.00	145.00	149.20							
SCRAPER/GRADR	100.00	105.30	110.10	115.20	120.60	124.40	136.10	160.40	195.60	213.40	1.16						
SPECIAL MACH	100.00	105.20	110.20	117.70	126.10	129.00	134.10	151.30	189.40	205.30							
TRACTOR	100.00	106.80	112.50	117.00	122.30	127.00	134.50	154.70	188.30	203.80	21.81						
TRUCKS	100.00	104.20	110.20	118.20	115.30	129.30	131.50	156.80	196.80	208.20	2.81	13.64	83.33				
WELDING EQUIP	100.00	102.10	105.00	110.70	114.90	120.60	125.10	157.30	192.40	195.20							
OTHER	100.00	105.70	110.40	115.90	121.40	125.70	130.70	152.30	185.20	199.80	30.19	63.63	16.67				
MATERIAL TYPE																	
CEMENT	100.00	102.30	110.30	114.00	124.60	131.90	137.10	161.93	193.29	214.70		53.33					
ELECTRICAL	100.00	102.70	104.40	110.10	113.10	112.90	116.46	137.40	166.26	169.85							
EXPLOSIVES	100.00	101.60	104.10	106.10	111.30	115.20	120.09	149.96	177.98	186.70							
FABRICATD MET	100.00	102.20	105.90	112.00	118.20	122.40	127.44	161.23	189.03	194.20							
LUMBER	100.00	120.50	134.30	113.30	141.00	167.70	214.29	211.44	200.60	243.70		42.22					
MISC. METAL	100.00	102.50	107.30	114.30	123.00	130.40	134.17	170.03	195.60	210.10			100.00				
PERAR	100.00	99.10	100.00	109.20	117.10	114.70	126.06	201.40	190.21	183.60		4.45					
AGGREGATE	100.00	103.80	107.00	113.50	119.10	121.70	124.96	135.17	151.00	162.50	82.70						
STEEL PLATES	100.00	102.90	100.30	115.10	129.60	137.60	142.80	174.88	203.75	209.70							
OTHER	100.00	105.60	111.90	112.50	119.50	126.60	138.50	160.90	174.80	187.70	17.21						

16B BANK STABILIZATION (BASED ON ESTIMATES WITH LARGE AMOUNTS OF RIPRAP SLOPE PROTECTION AND MAJOR DRAINAGE SYSTEMS).



APPENDIX B: WORK CATEGORY BREAKOUT

Tables B1 through B11 present the checklists from Appendix B of EM 1110-2-1301 for each of the 11 features having cost account features. The tables also indicate the work categories assigned to each item in the checklists.

Table B1

Checklist for Reservoirs

Cost Account Number	Description or Item	Plant	Labor	Material
03	RESERVOIRS (OR NAVIGATIONAL POOLS)			
	Clearing Trees, Brush, and Debris	E	E	E
	Disposal of Materials	E	E	E
	Removal of Improvements	E	E	E
	Removal of Structures	E	E	E
	Salvage (credit)	E	E	E
	Boundary Line Survey and Marking	E	E	E
	Drainage	E	E	E
	Rim Grouting	E	C	C
	Erosion Control	E	E	E
	Mine Sealing	E	C	C
	Gas or Oil Well Sealing	E	C	C

Table B2

Checklist for Dams

Cost Account Number	Description or Item	Plant	Labor	Material
04	CONCRETE DAM			
	Clearing (see Table B1) use 03			
	Diversion and Care of River			
	Cofferdam			
	Earth Embankment	E	E	E
	Riprap and Bedding	E	E	E
	Steel Sheet Piling for Cells	E	S	E
	Cellular Cell Fill	E	E	E
	Concrete Cell Capping	C	C	C
	Unwatering Cofferdam			
	Wellpoints	E	E	E
	Pumps, Pipeline and Power	M	M	M
	Flood Gates	S	S	S
	Operation and Maintenance	M	M	M
	Removal of Cofferdam	E	E	E
	Excavation and Foundation Work			
	Clearing and Grubbing	E	E	E
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Trench	E	E	E

Table B2 (cont'd)

Checklist for Dams

Cost Account Number	Description or Item	Plant	Labor	Material
	Relief Wells	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Drilling Grout Holes	E	E	E
	Drilling Drain Holes	E	E	E
	Grouting	C	C	C
	Drain and Grout Pipe and Fittings	E	E	S
	Foundation Preparation	E	E	E
	Dental Fill			
	Lean Concrete	C	C	C
	Shotcrete	C	C	C
	Piling, Test	E	E	E
	Piling, Steel "H" Bearing	E	E	S
	Piling, Concrete	E	E	C
	Piling, Wood	E	E	C
	Piling, Steel Sheet	E	E	S
	Non-Overflow Concrete Section			
	Foundation Treatment	C	C	C
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Drilling for Anchors	E	E	E
	Anchors	S	S	S
	Structure Instrumentation	C	C	L
	Concrete Gravity Monoliths			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Cooling Pipe System	C	C	M
	Structure Instrumentation	C	C	L
	Parapet Wall Concrete			
	Concrete	C	C	C
	Reinforcing Steel		S	
	Cement	C	C	C
	Joint Filler	C	C	C
	Embedded Metal Work	E	E	S
	Conduits, Air	E	E	M
	Conduits, Electrical	E	E	L
	Pipe, Water Service	E	E	M
	Pipe, Drainage	E	E	S
	Crane Rails	E	E	S
	Handrail	E	E	S
	Stairs	E	E	S
	Ladders	E	E	S
	Overflow Concrete Section			
	Concrete Monoliths	C	C	C
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Cooling Pipe System	C	C	M
	Structure Instrumentation	C	C	L

Table B2 (cont'd)

Checklist for Dams

Cost Account Number	Description or Item	Plant	Labor	Material
	Piers and Walls			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Structure Instrumentation	C	C	L
	Apron, Stilling Basin Slabs and Deflectors			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Drilling for Anchors	E	E	E
	Drilling Drain Holes	E	E	E
	Anchors	E	E	S
	Structure Instrumentation	C	C	L
	Spillway Bridge			
	(see Superstructure under Account No. 08 Bridges)			
	Earthen Abutments			
	(see Embankment under Earth Dams)			
	Gates and Associated Items			
	Spillway Crest Gates			
	Gates (type)	S	S	S
	Operating Machinery	M	M	M
	Embedded Items	S	S	S
	Sluice Gates			
	Gates, Slide	S	S	S
	Operating Machinery	M	M	M
	Embedded Items	S	S	S
	Stop Logs and Needles			
	Structural Steel	S	S	S
	Timber	E	E	E
	Hoisting Equipment			
	Crane or Hoist	-	-	M
	Rails and Fittings	S	S	S
	Associated General Items			
	Miscellaneous Structures	-	-	-
	Structural Steel Access Bridges and Platforms	S	S	S
	Gratings and Floor Plates	S	S	S
	Guard and Handrails	S	S	S
	Elevator	M	M	M
	Stairways and Ladders	S	S	S
	Electric Power and Lighting	E or C	E or C	L
	Tile Gages	E or C	E or C	L
	Float Well Equipment	E or C	E or C	L
	Piezometers Including Piping	E or C	E or C	L
	Standby Power Equipment	L	L	L
	Flag Poles	S	S	S
	Fencing	E	E	S
	Telephone	L	L	L

Table B2 (cont'd)

Checklist for Dams

Cost Account Number	Description or Item	Plant	Labor	Material
04	EARTH DAMS			
	Diversion and Care of River (see Diversion etc. under Concrete Dam)			
	Excavation and Foundation Work			
	Well Points	E	E	E
	Unwatering Wells	E	E	E or M
	Foundation Treatment	E	E	E
	Dental Fill			
	Lean Concrete	C	C	C
	Shorcrete	C	C	C
	(see also Excavation etc. under Concrete Dam)			
	Non-Overflow Concrete Section (see Non-Overflow etc. under Concrete Dam)			
	Overflow Concrete Section (see Overflow, etc. under Concrete Dam)			
	Embankment			
	Borrow Excavation, Impervious	E	E	E
	Borrow Excavation, Pervious	E	E	E
	Borrow Excavation, Random	E	E	E
	Borrow Excavation, Rock	E	E	E
	Embankment Fill, Impervious	E	E	E
	Embankment Fill, Pervious	E	E	E
	Embankment Fill, Random	E	E	E
	Embankment Fill, Rock	E	E	E
	Embankment Slope Treatment			
	Riprap	E	E	E
	Handplaced Riprap	E	E	E
	Gravel Bedding	E	E	E
	Topsoil	E	E	E
	Sodding	E	E	E
	Drainage System			
	Relief Wells	E	E	E
	Trench Excavation	E	E	E
	Drain Pipe	E	E	C or S
	Manholes	E	E	E
	Graded Filters	E	E	E
	Ditch Drains	E	E	C or S
	Paved Gutters	E	E	C
	Outfall Structures			
	Soil Mechanics Instruments	E	E	L
	Road Surfacing, Guard Rails and Lighting			
	Outlet Works			
	Outlet Approach Channel	E	E	E
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Trench	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Intake Structure			
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Drilling Anchor Holes	E	E	E
	Anchors	E	E	S

Table B2 (cont'd)

Checklist for Dams

Cost Account Number	Description or Item	Plant	Labor	Material
	Concrete, Approach Walls and Slabs	C	C	C
	Rock Bolts	E	E	S
	Concrete, Intake Structure	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Trashracks with Guides	S	S	S
	Drain Pipe	C	C	S or C
	Airvent Piping	C	C	S
	Structure Instrumentation	C	C	L
	Conduit or Tunnel			
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Tunnel	E	E	E
	Dental Fill	C	C	C
	Lean Concrete	C	C	C
	Shotcrete	C	C	C
	Rock Bolts	E	E	S
	Concrete Tunnel Lining	C	C	C
	Steel Tunnel Lining	S	S	S
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Water Stops	C	C	C
	Structural Steel Tunnel Ribs	S	S	S
	Structure Instrumentation	E or C	E or C	L
	Drilling Grout Holes	E	E	E
	Drilling Drain Holes	E	E	E
	Grout and Drain Pipe and Fittings	E	E	S
	Grouting	C	C	C
	Drain Pipe (Half-round)	E	E	S
	Compacted Backfill	E	E	E
	Outlet Portal and Stilling Basin			
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Drilling Anchor Holes	E	E	E
	Drilling Drain Holes	E	E	E
	Anchor	E	E	S
	Concrete, Portal	C	C	C
	Concrete, Stilling Basin Walls	C	C	C
	Concrete, Stilling Basin Slab	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Structure Instrumentation	C	C	L
	Drain Pipe (Half-round)	C	C	S
	Graded Gravel	E	E	E
	Gravel Bedding	E	E	E
	Derrick Stone	E	E	E
	Riprap	E	E	E

Table B2 (cont'd)

Checklist for Dams

Cost Account Number	Description or Item	Plant	Labor	Material
	Gate Operating House	Building Index		
	Intake Gates and Equipment			
	Gate Guides, Embedded Frame and Seals	S	S	S
	Gates	S	S	S
	Gate Hoisting Machinery	M	M	M
	Emergency Gates	M	M	M
	Stop Logs and Bulkhead	C	C	C
	Power Hoist or Crane	M	M	M
	Structural Steel Platforms and Gratings	S	S	S
	Stairways, Ladders and Guardrails	S	S	S
	Access Bridge to Intake Tower (see Bridges–Table 85)			
	Associated Items			
	Electric Power and Lighting	L	L	L
	Telephone System	L	L	L
	Heating and Ventilating System	M	M	M
	Fuel Oil Storage System	M	M	M
	Diesel-Electric Generator	L	L	L
	Tile Gages	C or E	C or E	L
	Staff Gages	C or E	C or E	L
	Float Well Equipment	C or E	C or E	L
	Flag Pole	S	S	S
	Fencing	E	E	S
	OTHER RELATED ITEMS			
08	Roads, Railroads, Bridges (see Table B5)			
09	Channels and Canals (see Table B6)			

Table B3

Checklist for Locks

Cost Account Number	Description or Item	Plant	Labor	Material
05	LOCKS			
	Clearing (see Table B1)	E	E	E
	Diversion and Care of River			
	Cofferdam			
	Shore Fill	E	E	E
	Preparatory Fill (sand island and working berm)	E	E	E
	Riprap and Bedding	E	E	E
	Steel Sheet Piling for Cells	E	E	S
	Cellular Cell Fill	E	E	E
	Concrete Cell Capping	C	C	C
	Unwatering Cofferdam			
	Wellpoints	E	E	E
	Pumps, Pipelines and Power	M	M	M
	Flood Gates	S	S	S
	Operation and Maintenance	M	M	M
	Removal of Cofferdam	E	E	E

Table B3 (cont'd)

Checklist for Locks

Cost Account Number	Description or Item	Plant	Labor	Material
	Approach Channels (see Table B6)			
	Lock Excavation and Foundation Work			
	Clearing and Grubbing	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Structural	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Drilling Grout Holes	E	E	E
	Grout Pipe and Fittings (furnish and install)	E	E	S
	Grouting	C	C	C
	Foundation Preparation	E	E	E
	Drilling Foundation Drain Holes	E	E	E
	Relief Wells	E	E	E
	Pipe and Fittings for Foundation Drains (furnish and install)	E	E	S
	Shoring	E	E	E
	Guide and Guard Walls, Upper and Lower			
	Concrete	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Bearing Piles–Wood, Steel, Concrete	E	E	C or S
	Structure Instrumentation	C	C	L
	Approach Walls (upper and lower)			
	Concrete	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Structure Instrumentation	C	C	L
	Culvert Intake and Discharge Structures			
	Concrete	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Mooring Pier			
	Lock Walls, Sills, Floor and Laterals			
	Sheet Piling Cutoff	E	E	S
	Bearing Piles–Wood, Steel, Concrete	E	E	S or C
	Gate Bay Walls and Sills (upper and lower)			
	Concrete	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Structure Instrumentation	C	C	L
	Lock Chamber Walls			
	Concrete	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Structure Instrumentation	C	C	L
	Lock Floor			
	Concrete	C	C	C
	Cement	C	C	C

Table B3 (cont'd)

Checklist for Locks

Cost Account Number	Description or Item	Plant	Labor	Material
	Reinforcing Steel	S	S	S
	Water Stops	C	C	C
	Joint Filler	C	C	C
	Laterals			
	Concrete	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Water Stops	C	C	C
	Joint Fillers	C	C	C
	Wall Armor	S	S	S
	Floating Mooring Bits and Anchorage	S	S	S
	Line Hooks	S	S	S
	Check Posts	S	S	S
	Ladders	S	S	S
	Hand Railing	S	S	S
	Stair Treads	S	S	S
	Gratings	S	S	S
	Trash Racks	S	S	S
	Nosings			
	Lock Gates (upper and lower)			
	Gate Leaves (miter, sector, submergible and/or lift)–Furnishing, Installing, and Testing	S	S	S
	Gate Anchor and Pintle Bases	S	S	S
	Wall Quoin Posts and Anchors	S	S	S
	Top Anchorage	S	S	S
	Seals	S	S	S or C
	Ratchets	S	S	S
	Gate Latches	S	S	S
	Timber Fenders	E	E	C
	Walkways	C or S	C or S	C or S
	Walkway Gratings	S	S	S
	Hand Railing	S	S	S
	Painting	-	-	-
	Cathodic Protection	S	S	S
	Culvert Valves			
	Tainter Valves–Furnishing, Installing and Testing	M	M	M
	Trunnion Anchorages	S	S	S
	Liners	S	S	S
	Seals	S	S	S
	Bulkhead and Frame	S	S	S
	Lock Operating Machinery			
	Gate Operating Machinery–Furnishing, Installing and Testing	M	M	M
	Tainter Valve Operating Machinery–Furnishing, Installing & Testing	M	M	M
	Control Shelters		Building Index	
	Emergency Bulkheads or Dams	C	C	C
	Cranes	C	-	-
	Access Bridge (see Table B5)	-	-	-
	Backfill Behind Walls	E	E	E
	Stone Protection, With Bedding and Filter Blankets	E	E	E
	Operation Building			
	Structural Frame		Building Index	
	Concrete		Building Index	

Table B3 (cont'd)

Checklist for Locks

Cost Account Number	Description or Item	Plant	Labor	Material
	Brickwork		Building Index	
	Roofing		Building Index	
	Metal Doors and Frames		Building Index	
	Metal Windows and Louvers		Building Index	
	Glass and Glazing		Building Index	
	Metal Partitions		Building Index	
	Toilet and Shower Equipment		Building Index	
	Plumbing System		Building Index	
	Heating System		Building Index	
	Electrical System		Building Index	
	Piping System			
	Hydraulic System	M	M	M
	Compressed Air System	M	M	M
	Gas Supply System	M	M	M
	Service Water System	M	M	M
	Domestic Water System	M	M	M
	Fuel Oil System	M	M	M
	Power and Lighting Systems			
	Electric Service–Commercial, Primary, and Secondary	L	L	L
	Electric Service–Emergency, incl Standby Generator and Diesel Engine	L	L	L
	Main Switchboard	L	L	L
	Operation Building Power & Lighting System	L	L	L
	Lock Wall Power Circuits and Controls	L	L	L
	Lock Lighting Systems	L	L	L
	Visual Traffic Signal Systems	L	L	L
	Telephone Service	L	L	L
	Grounding System	L	L	L
	Service Building and Area Lighting	L	L	L
	Radio Communications System	L	L	L
	Service Building		Building Index	
	Esplanade and Parking Area			
	Subgrade Preparation (road index)			
	Paving (road index)			
	Concrete Walks and Curbing	C	C	C
	Drainage	E	E	C or S
	Rock Paving	E	E	E
	Flagpole and Base	E	E	S
	Fence	E	E	S
	Soil Pipe	E	E	C or S
	Lighting Standards	L	L	L
	Guard Rail	E	E	S
	Laboratory Building		Building Index	
	Landscaping	E	E	E
	Signs	?		
	Access Road (see Table B5)			

Table B4

Checklist for Power Plants

Cost Account Number	Description or Item	Plant	Labor	Material
07	Powerhouse			
	Diversion and Care of River (see paragraph 10b, ER 1110-2-1200)			
	Cofferdam			
	Earth Embankment	E	E	E
	Riprap and Bedding	E	E	E
	Steel Sheet Piling for Cells	E	E	S
	Cellular Cell Fill	E	E	E
	Concrete Cell Capping	C	C	C
	Flood Gates	S	S	S
	Unwatering			
	Pumps, Pipeline and Power	M	M	M
	Wellpoints	E	E	E
	Unwatering Wells	E	E	E
	Removal of Cofferdam	E	E	E
	Powerhouse Substructure			
	Excavation and Foundation Work			
	Clearing	E	E	E
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Foundation Preparation	E	E	E
	Drilling Grout Holes	E	E	E
	Grouting	C	C	C
	Drilling Foundation Drain Holes	E	E	E
	Drain and Grout Pipe Fittings	E	E	S
	Relief Wells	E	E	E
	Piling, Test	E	E	E
	Piling, Steel Bearing	E	E	S
	Piling, Concrete	E	E	C
	Piling, Wood	E	E	E
	Piling, Steel Sheet	E	E	S
	Mass Concrete			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Structure Instrumentation	C	C	L
	Concrete Scroll Case Encasement			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Concrete Retaining Walls			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Miscellaneous Concrete			
	Concrete, Stairs	C	C	C
	Concrete, Paving	C	C	C
	Concrete, Floor Finish (Thickness)	C	C	C
	Cement	C	C	C
	Reinforcing Steel	S	S	S
	Waterstops and Joint Fillers			
	Waterstop, Metal	C	C	S
	Waterstop, Plastic	C	C	C

Table B4 (cont'd)

Checklist for Power Plants

Cost Account Number	Description or Item	Plant	Labor	Material
	Waterstop, Rubber	C	C	C
	Joint Filler, Premolded	C	C	C
	Joint Filler, Bituminous	C	C	C
	Backfill and Grading			
	Backfill, Compacted	E	E	E
	Backfill, Dumped Rock	E	E	E
	Riprap Bedding	E	E	E
	Riprap	E	E	E
	Derrick Stone	E	E	E
	Top Soil	E	E	E
	Sodding	E	E	E
	Seeding	E	E	E
	Powerhouse Intake Works			
	Intake Trash Racks	S	S	S
	Intake Trash Rack Guides	S	S	S
	Intake Stop Logs	S	S	S
	Intake Stop Log Guides	S	S	S
	Intake Bulkhead Gates	S	S	S
	Intake Gates (Movable Parts)	S	S	S
	Intake Gate Embedded Items	S	S	S
	Intake Gate Hoists	M	M	M
	Miscellaneous Equipment			
	Gantry Crane	M	M	M
	Mechanical Trash Rack Rake Equipment	M	M	M
	Drift Barriers	M	M	M
	Intake Vents	S	S	S
	Walkway, Gratings, Railings and Pier Nosing	S	S	S
	Penstocks	S	S	S
	Penstock Concrete	C	C	C
	Surge Tanks	S	S	S
	Surge Tank Concrete	C	C	C
	Draft Tube Equipment			
	Draft Tube Gates (Movable Parts)	S	S	S
	Draft Tube Gates Embedded Items	S	S	S
	Draft Tube Gate Hoists	M	M	M
	Draft Tube Stop Logs	S	S	S
	Draft Tube Stop Log Guides	S	S	S
	Walkway, Gratings and Railings	S	S	S
	Draft Tube Gantry Crane	M	M	M
	Superstructure			
	Concrete Superstructure Walls, Beams, Columns and Slabs			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Concrete Roof Slab			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Miscellaneous Concrete			
	Sawdust Concrete	C	C	C
	Parapet Walls	C	C	C
	Parapet Coping	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Structural Steel	S	S	S

Table B4 (cont'd)

Checklist for Power Plants

Cost Account Number	Description or Item	Plant	Labor	Material
	Miscellaneous Steel			
	Steel Stairs	S	S	S
	Crane Rails and Fillings	S	S	S
	Pipe Railings	S	S	S
	Gratings, Ladders, Stair Treads, etc.	S	S	S
	Roof Drains	S	S	S
	Superstructure Building Items		Building Index	
	Common Brick			
	Face Brick			
	Sand-Line Brick			
	Glazed Brick			
	Terra Cotta Tile			
	Damp proofing			
	Lathing and Plastering			
	Wall Base			
	Tile Flooring			
	Terrazzo Floor			
	Wainscoting			
	Acoustical Work			
	Windows			
	Doors			
	Copper Flashing			
	Roof Insulation			
	Painting			
	Clocks			
	Furniture			
	Furnishings			
	Hardware			
07.2	Turbines and Generators			
	Turbines	L	L	L
	Install Turbines	L	L	L
	Governors	L	L	L
	Install Governors	L	L	L
	Furnish and Install Generators	L	L	L
	Unloading, Hauling, Storing and Painting Generators	E	E	E
	Install Generator Foundation Bolts, Sole Plates and Rotor Erection Plates	M	M	M
	Butterfly Valves	S	S	S
	Install Butterfly Valves	S	S	S
07.3	Switchyard Accessory and Miscellaneous Power Plant Equipment and Tailrace			
	Switchyard Structures			
	Foundation and Access			
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Concrete Foundation Footings	E	E	E
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Steel Rails, Fittings and Turntables	S	S	S
	Road Paving	E	E	E
	Drainage	E	E	E
	Towers and Equipment Supports, Steel	S	S	S

Table B4 (cont'd)

Checklist for Power Plants

Cost Account Number	Description or Item	Plant	Labor	Material
	Switchyard Tunnel			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Mechanical Items			
	PH Bridge Crane	M	M	M
	PH Elevator	M	M	M
	Maintenance Shop Equipment	M	M	M
	Diesel Generator Set and Appurtenances	M	M	M
	Heating, Ventilation and Air Conditioning Systems	M	M	M
	CO_2 Fire Protection Systems and Equipment	M	M	M
	Transformer Transfer Car	M	M	M
	Transformer Fire Protection System	M	M	M
	Headwater and Tailwater Float Wells, Recorders and Transmitters	L	L	L
	Draft Tube Unwatering and Station Drainage System	M	M	M
	Draft Tube Water Depressing System	M	M	M
	Turbine and Draft Tube Air Vent Systems	M	M	M
	Piezometer and Turbine Flowmeter Piping	M	M	M
	Raw Water Systems	M	M	M
	Water Wells and Portable Water System	M	M	M
	Water Treatment Plant	M	M	M
	Sanitary System	M	M	M
	Sewage Treatment Plant	M	M	M
	Insulating and Lubricating Oil	M	M	M
	Insulating and Lubricating Oil Storage and Handling Systems	M	M	M
	Compressed Air Systems	M	M	M
	Piping Identification System	M	M	M
	Pipe Insulation	M	M	M
	Plumbing Fixtures, Water Coolers, Drinking Fountains, Water Still and Electric Water Heaters	M	M	M
	Miscellaneous Mechanical Equipment and Accessories	M	M	M
	Electrical Items			
	Conduit System	L	L	L
	Cable Tray System	L	L	L
	Insulated Wire and Cable (1,000 volts and below)	L	L	L
	Insulated Power Cable (over 1,000 volts)	L	L	L
	Lighting System	L	L	L
	Grounding System	L	L	L
	PAX Telephone and Code Call System	L	L	L
	Main Control Switchboards and Associated Equipment	L	L	L
	13.8 kV Metalclad Switchgear	L	L	L
	13.8 kV Metal-Enclosed Bus	L	L	L
	4.16 kV Metalclad Switchgear	L	L	L
	4.16 kV Metal-Enclosed Bus	L	L	L
	480-Volt Station Service Switchgear and Transformers	L	L	L
	480-Volt Metal-Enclosed Bus	L	L	L

Table B4 (cont'd)

Checklist for Power Plants

Cost Account Number	Description or Item	Plant	Labor	Material
	480-Volt Power Distribution Centers	L	L	L
	480-Volt Power Panelboards	L	L	L
	480-Volt Power Outlets	L	L	L
	125-Volt Station Battery	L	L	L
	Battery-Chargers	L	L	L
	Inverter	L	L	L
	Power Transformers	L	L	L
	Lightning Arresters	L	L	L
	Oil Circuit Breakers	L	L	L
	Outdoor Instrument Transformers	L	L	L
	Wave Traps and Coupling Capacitor Potential Devices	L	L	L
	High-Voltage Disconnects and Bus Support Insulators	L	L	L
	High-Voltage Busses, Fittings and Accessories	L	L	L
	High-Voltage Overhead Lines (Sw-Yd to PH)	L	L	L
	Miscellaneous Electrical Equipment and Accessories	L	L	L
	Tailrace			
	Clearing	E	E	E
	Excavation, Earth	E	E	E
	Excavation, Rock	E	E	E
	Riprap Bedding	E	E	E
	Riprap	E	E	E
	Derrick Stone	E	E	E
	Topsoil	E	E	E
	Seeding and Sodding	E	E	E
	Fencing	S	E	S

Table B5

Checklist for Roads, Railroads, and Bridges

Cost Account Number	Description or Item	Plant	Labor	Material
08A	Roads (also applicable to Cost Account No. 02.1)			
	Care of Traffic			
	Temporary Road Construction	E	E	E
	Barriers and Markers	E	E	E
	Site Clearing			
	Clearing and Grubbing	E	E	E
	Removing Existing Structures	E	E	E
	Excavation and Embankment			
	Excavation			
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Structural	E	E	E
	Excavation, Borrow	E	E	E
	Embankment			
	Random Fill	E	E	E
	Compacted Fill	E	E	E

Table B5 (cont'd)

Checklist for Roads, Railroads, and Bridges

Cost Account Number	Description or Item	Plant	Labor	Material
	Drainage			
	Trench Excavation	E	E	E
	Filter Material	E	E	E
	Pipe	E	E	C or S
	Backfill	E	E	E
	Catch Basins	E	E	C
	Paved Gutters	C	C	C
	Concrete Structures	C	C	C
	Slope Treatment			
	Topsoil	E	E	E
	Seeding	E	E	E
	Sodding	E	E	E
	Gravel Bedding	E	E	E
	Riprap	E	E	E
	Roadway			
	Subgrade, Fine Grading	E	E	E
	Base Course			
	Gravel Base Course	E	E	E
	Crushed Stone	E	E	E
	Bituminous Tack Coat	E	E	E
	Surface Course			
	Flexible Pavement			
	Asphalt	E	E	E
	Asphaltic Concrete	E	E	E
	Stone or Sand Seal Coat	E	E	E
	Portland Cement Pavement			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Expansion Joint Material	C	C	C
	Associated Road Items			
	Guard Rails	S	S	S
	Curbs	C	C	C
	Sidewalks	C	C	C
	Fencing	S	E	S
	Signs and Markers	E	E	E
	Landscaping	E	E	E
	Traffic Stripe (Paint)	E	E	E
08C	Railroads			
	Care of Traffic			
	Temporary Detour Track	E	E	E
	Temporary Bridge	S	S	S
	Site Clearing			
	Clearing and Grubbing	E	E	E
	Removing Existing Structures	E	E	E
	Excavation and Embankment			
	Excavation			
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Structural	E	E	E
	Excavation, Borrow	E	E	E
	Embankments			
	Random Fill	E	E	E
	Compacted Fill	E	E	E

Table B5 (cont'd)

Checklist for Roads, Railroads, and Bridges

Cost Account Number	Description or Item	Plant	Labor	Material
	Drainage			
	Trench Excavation	E	E	E
	Filter Material	E	E	E
	Pipe	E	E	C or S
	Backfill	E	E	E
	Paved Gutters	C	C	C
	Catch Basins	E	E	C
	Concrete Structures	C	C	C
	Erosion Control	E	E	E
	Topsoil	E	E	E
	Seeding	E	E	E
	Sodding	E	E	E
	Gravel Bedding	E	E	E
	Riprap	E	E	E
	Tunnel Construction			
	Excavation, Portal and Open Cut	E	E	E
	Excavation, Tunnel	E	E	E
	Excavation, Structural	E	E	E
	Dental Fill, Shotcrete	C	C	C
	Rock Bolts	S	S	S
	Concrete, Tunnel Lining			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Concrete, Portals			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Concrete, Miscellaneous			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Associated Concrete Work			
	Waterstops	C	C	C
	Joint Filler	C	C	C
	Grouting			
	Drilling Grouting Holes	E	E	E
	Grout Pipe and Fittings	C	C	C
	Grouting	C	C	C
	Tunnel Ribs	S	S	S
	Lagging and Bracing	S	S	S
	Liners and Plates	S	S	S
	Tunnel Drainage Provisions			
	Drain Pipes (Each Size)	E	E	C or S
	Collection Sump	E	E	S
	Pump	M	M	M
	Pump Discharge Pipe	M	M	M
	Associated Tunnel Items			
	Compressed Air System	M	M	M
	Ventilating System	M	M	M
	Structural Instrumentation	L	L	L
	Trackwork			
	Foundation Subgrade			
	Fine Grading	E	E	E
	Stone Ballast	E	E	E

Table B5 (cont'd)

Checklist for Roads, Railroads, and Bridges

Cost Account Number	Description or Item	Plant	Labor	Material
	Track			
	Ties	E	E	E
	Rail and Accessories	S	E	S
	Turnouts	S	E	S
	Switch Stands	S	S	S
	Associated Items			
	Cattle Guards	S	S	S
	Signs	E	E	S
	Crossing Signal System	S	E	S
	Fencing	S	E	S
	Landscaping	E	E	E
08B	Bridges			
	Care of Traffic			
	Temporary Bridge	S	S	S
	Temporary Road	E	E	E
	Clearing Site	E	E	E
	Cofferdams			
	Steel Sheet Piling	E	E	S
	Cofferdam Fill	E	E	E
	Unwatering	M	M	M
	Removal	E	E	E
	Bridge Substructure (Abutments and Piers)			
	Excavation			
	Structural	E	E	E
	Rock	E	E	E
	Foundations			
	Steel Bearing Piling	S	S	S
	Concrete Bearing Piling	C	C	C
	Wood Bearing Piling	E	E	E
	Concrete for Abutments			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Concrete for Piers			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Structural Steel Superstructure			
	Steel Trusses, Girders and Beams	S	S	S
	Railings and Guards	S	S	S
	Steel Floors and Gratings	S	S	S
	Miscellaneous Steel	S	S	S
	Concrete Floor Slab	C	C	C
	Curb	C	C	C
	Painting	E	E	E
	Wood Superstructure			
	Wood Trusses, Girders and Beams	E	E	E
	Floor	E	E	E
	Railing	E	E	E
	Curb	E	E	E
	Miscellaneous Steel	S	S	S
	Concrete Superstructure			
	Beams and Girders	C	C	C
	Concrete	C	C	C

Table B5 (cont'd)

Checklist for Roads, Railroads, and Bridges

Cost Account Number	Description or Item	Plant	Labor	Material
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Prestressed Concrete Bridge Members			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Floor or Deck			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Associated Items			
	Electrical Lighting and Power	L	L	L
	Operating Machinery for Movable Spans	M	M	M
	Mechanical Bridge Barriers	M	M	M
	Signs	E	E	E

Table B6

Checklist for Channels and Canals

Cost Account Number	Description or Item	Plant	Labor	Material
05	LOCKS (see Table B3)			
08	ROADS, RAILROADS AND BRIDGES (see Table B5)			
09	CHANNELS AND CANALS			
	Preliminary Work and Traffic Control			
	Mobilization and Demobilization of Equipment	E	E	E
	Preparation of Disposal Areas	E	E	E
	Dikes in Disposal Area	C	C	C
	Spillway or Weir for Disposal Areas	C	C	C
	Navigation Aids for Traffic Control	C	C	C
	Removal of Debris	E	E	E
	Excavation			
	Channel and Harbor	D or E	D or E	D or E
	Dredging	D	D	D
	Dipper	D	D	D
	Pipeline	D	D	D
	Ledge Rock	D	D	D
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Structural	E	E	E
	Clearing and Snagging	D or E	D or E	D or E
	Protective Work (see Bank Stabilization Table B11)	E	E	E
	Diversion Structures (see Floodway Control and Diversion Structures Table B10)	C	C	C
	Aquatic Growth Control	-	-	-
	Bridge Alterations (see Table B5)	S	S	S
	General Items	-	-	-
	Dolphins	D	D	S
	Docks	C	C	C
	Navigational Aids	L	L	L
10	BREAKWATERS (see Table B7)			
11	LEVEES AND FLOOD WALLS (see Table B8)			

Table B7

Checklist for Breakwaters and Seawalls

Cost Account Number	Description or Item	Plant	Labor	Material
10	BREAKWATERS			
	Preliminary Work			
	Mobilization and Demobilization of Equipment	E	E	E
	Removal or Demolition of Structures	E	E	E
	Alteration of Structures	E	E	E
	Salvaging and Resetting Stone	E	E	E
	Excavation	E	E	E
	Breakwater, Stone			
	Filter and Bedding Material	E	E	E
	Core Stone, Quarry Run or Spalls	E	E	E
	Armor Cap, Cover or Rubble Material	E	E	E
	Derrick or Riprap	E	E	E
	Concrete Grout	C	C	C
	Concrete for Caps and Crowns			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Breakwater, Artificial Concrete Units (tetrapods, quadrapods, dolos, etc.)			
	Manufacture and Stockpile–Ton Unit	C	C	C
	Place–Ton Unit	E or D	E or D	E
	Breakwater, Steel or Timber Piling			
	Piling, Steel Sheet	S	S	S
	Piling, Steel H	S	S	S
	Piling, Timber	E	E	E
	Steel, Miscellaneous	S	S	S
	Timber, Structural	E	E	E
	Hardware, Builders	E	E	E
	Sea Wall, Concrete (see Table 8B–Floodwalls)	C	C	C
	Associated Items			
	Navigation Lights	L	L	L
	Signs and Warning Signals	E	E	E
	Guard Rail	S	S	S
	Mooring Rings and Cleats	E	E	E

Table B8

Checklist for Levees and Floodwalls

Cost Account Number	Description or Item	Plant	Labor	Material
11	LEVEES			
	River Diversion and Preliminary Work			
	Diversion and Care of Water	E	E	E
	Clearing and Grubbing	E	E	E
	Removal or Alteration of Structures	E	E	E
	Construction of Access and Temporary Roads	E	E	E
	Embankment			
	Stripping Foundation	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Excavation, Structural	E	E	E
	Foundation Preparation	E	E	E
	Borrow Excavation, Pervious or Random	E	E	E
	Borrow Excavation, Impervious	E	E	E
	Embankment Fill	E	E	E
	Backfill	E	E	E
	Steel Sheet Piling	S	S	S
	Slope Treatment			
	Gravel Bedding	E	E	E
	Dumped Riprap	E	E	E
	Handplaced Riprap	E	E	E
	Topsoil	E	E	E
	Seeding, Fertilizing and Mulching	E	E	E
	Embankment Drainage			
	Toe Drains			
	Excavation, Common	E	E	E
	Filter Material	E	E	E
	Rock Drain Material	E	E	E
	Manholes	C	C	C
	Pipe Drains			
	Trench Excavation	E	E	E
	Pipe, Concrete, Clay or Metal	E	E	C or S
	Filter Material	E	E	C or S
	Backfill	E	E	C or S
	Soils Mechanics Instruments	E	E	L
	Relief Wells	E	E	E
	Paved Gutters	C	C	C
	Catch Basins and Manholes	C	C	C
	Filter Blankets	E	E	E
	Structures and Machinery			
	Drainage Outlet Culverts	C	C	C
	Excavation	E	E	E
	Backfill	E	E	E
	Concrete Headwalls	C	C	C
	Pipe, Concrete Clay or Metal	C	C	C or S
	Flap Valves	E	S	S
	Concrete Gate Structures			
	Concrete	C	C	C
	Stop Logs	C	C	C
	Gates and Embedded Items	E	S	S
	Miscellaneous Metals	S	S	S
	Associated Minor Items			
	Gravel for Levee Crown	E	E	E
	Depth Gages	E	E	E
	Stop Log Storage Facilities	E	E	E

Table B8 (cont'd)

Checklist for Levees and Floodwalls

Cost Account Number	Description or Item	Plant	Labor	Material
	Fences	S	S	S
	Ramp Construction	C	C	C
	Pumping Plants (see Table B9)	-	-	-
11	FLOODWALLS			
	River Diversion and Preliminary Work			
	Diversion and Care of Water	E	E	E
	Clearing and Grubbing	E	E	E
	Removal or Alteration of Structures	E	E	E
	Construction of Access and Temporary Roads	E	E	E
	Foundation Work			
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Drilling Grout Holes	E	E	E
	Grouting	C	C	C
	Soils Mechanics Instruments	E	E	L
	Sheet Piling	S	S	S
	Bearing Piles	E	E	E
	Backfill	E	E	E
	Wall Construction			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Waterstop, Copper	C	C	C
	Waterstop, Rubber	C	C	C
	Waterstop, Plastic	C	C	C
	Joint Filler	C	C	C
	Drainage			
	Wall Toe Drain			
	Trench Excavation	E	E	E
	Pipe, Concrete, Clay or Metal	E	E	S or C
	Filter Material	E	E	E
	Paved Gutters	C	C	C
	Manholes and Catch Basins	C	C	C
	Outlet Culvert Structures			
	Structural Excavation	E	E	E
	Concrete	C	C	C
	Gates and Embedded Items	E	E	S
	Stop Logs	E	E	E
	Flap Gates	E	S	S
	Miscellaneous Metals	S	S	S
	Associated Minor Items			
	Gravel Bedding	E	E	E
	Riprap	E	E	E
	Top Soil	E	E	E
	Seeding	E	E	E
	Sodding	E	E	E
	Stop Log Storage Structures	E	E	E
	Depth Gages	E	E	E
	Fencing	S	S	S
	Pumping Plants (see Table B9)	S	S	S

Table B9

Checklist for Pumping Plants

Cost Account Number	Description or Item	Plant	Labor	Material
08	ROADS (see Table B5)			
11	LEVEES AND FLOODWALLS (see Table B8)			
13	PUMPING PLANT			
	Preparatory Work			
	Clearing and Grubbing	E	E	E
	Care of Water	E	E	E
	Removal and Alteration of Existing Facilities	E	E	E
	Pumping Plant Substructure			
	Excavation, Common	E	E	E
	Excavation, Structural	E	E	E
	Excavation, Trench	E	E	E
	Excavation, Rock	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Foundation Preparation	E	E	E
	Piling, Steel Sheet	S	S	S
	Piling, Steel Bearing	S	S	S
	Piling, Concrete	C	C	C
	Piling, Timber	E	E	E
	Substructure Base, Walls, Intake and Outlet Structures			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Waterstops	C	C	C
	Pumping Plant Floor Slab			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Miscellaneous Metal	S	S	S
	Pumping Plant Superstructure			
	Pumping Machinery and Appurtenances			
	Main Pumps	M	M	M
	Main Pump Motors	M	M	M
	Main Pump Diesel Engines	M	M	M
	Main Pump Transmission Gears	M	M	M
	Main Pump Discharge Piping	M	M	M
	Sump Pumps	M	M	M
	Miscellaneous Piping	M	M	M
	Intake and Exhaust Systems	M	M	M
	Cooling Systems	M	M	M
	Lubricating Systems	M	M	M
	Fuel Systems	M	M	M
	Gates and Valves			
	Flap Gates	S	S	S
	Backflow Gates with Operators	S	S	S
	Slide Gates with Operators	E	E	E
	Stop Logs, Timber	E	E	E
	Stop Logs, Metal	S	S	S
	Hoisting Equipment	M	M	M
	Gate Valves	S	S	S
	Check Valves	S	S	S

Table B9 (cont'd)

Checklist for Pumping Plants

Cost Account Number	Description or Item	Plant	Labor	Material
	Intake Equipment			
	Trash Racks	S	S	S
	Trash Rack Cleaning Machinery	M	M	M
	Trash Rack Hoisting Equipment	M	M	M
	Station Crane	M	M	M
	Auxiliary Equipment			
	Emergency Generator	E	L	L
	Fuel System (Heating)	M	M	M
	Engine Starting System	M	M	M
	Vacuum System	M	M	M
	Fuel Storage and Piping	M	M	M
	Ventilating System	M	M	M
	Heating System	M	M	M
	Dehumidification	M	M	M
	Float Gage	M	M	M
	Motor Control Center	M	M	M
	Switchgear and Buswork	M	M	M
	Lighting and Grounding	L	L	L
	Conduit and Wire	L	L	L
	Substation	L	L	L
	Miscellaneous Electrical Work and Testing	L	L	L
	Utilities			
	Telephone	L	L	L
	Water Supply and Plumbing System	M	M	M
	Sanitary Sewer System	E	E	E
	Power Supply Line	L	L	L

Table B10

Checklist for Floodway Control and Diversion Structures

Cost Account Number	Description or Item	Plant	Labor	Material
04	Concrete Gravity and Earth Fill Dams (see Table B2)			
08	Roads, Railroads and Bridges (see Table B5)			
09	Channels and Canals (see Table B6)			
11	Levees and Floodwalls (see Table B8)			
15	Overflow Weir or Spillway			
	Clearing (see Table B1)			
	Diversion and Care of River			
	Cofferdam			
	Earth Embankment	E	E	E
	Riprap	E	E	E
	Steel Sheet Piling for Cells	E	E	S
	Cellular Cell Fill	E	E	E
	Concrete Cell Capping	C	C	C
	Unwatering Cofferdam			
	Well Points	E	E	E
	Pumps, Pipeline and Power	M	M	M
	Flood Gates	S	S	S
	Removal of Cofferdam	E	E	E
	Dredging	D	D	E

Table B10 (cont'd)

Checklist for Floodway Control and Diversion Structures

Cost Account Number	Description or Item	Plant	Labor	Material
	Excavations & Foundation Work			
	Clearing and Grubbing	E	E	E
	Stripping	E	E	E
	Excavation, Common	E	E	E
	Excavation, Rock	E	E	E
	Foundation Excavation, Structural	E	E	E
	Relief Wells	E	E	E
	Close Line Drilling and Presplitting	E	E	E
	Drilling Grout Holes	E	E	E
	Grouting	C	C	C
	Drilling Drain Holes	E	E	E
	Drain and Grout Pipe and Fittings	E	E	S
	Foundation Preparation	E	E	E
	Bearing Piles, Concrete, Timber, Steel	E	E	E, C or S
	Steel Sheet Piling	E	E	S
	Overflow Structure			
	Mass Concrete for Spillway Section			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Waterstops	C	C	C
	Joint Material	C	C	C
	Cement	C	C	C
	Stilling Basin Retaining Walls			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Stilling Basin Slabs			
	Concrete	C	C	C
	Reinforcing Steel	S	S	S
	Cement	C	C	C
	Structure Instrumentation	C	C	L
	Bridges and Control Platforms			
	Concrete	C	C	C
	Reinforced Steel	S	S	S
	Cement	C	C	C
	Gates and Associated Items			
	Gates (type)	S	S	S
	Operating Machinery	M	M	M
	Embedded Items	S	S	S
	Stop Logs and Needles			
	Structural Steel	S	S	S
	Timber	E	E	E
	Guides	S	S	S
	Hoisting Equipment			
	Crane or Hoist	M	M	M
	Rails and Fittings	S	S	S
	Hydraulic and Compressed Air Systems	M	M	M
	Electrical Service and Lighting	L	L	L
	Miscellaneous Structural Steel			
	Bridges and Platforms	S	S	S
	Gratings and Floor Plates	S	S	S
	Guard and Hand Rails	S	S	S
	Stairs and Ladders	S	S	S
	Painting Metal Work	E	E	E

Table B10 (cont'd)

Checklist for Floodway Control and Diversion Structures

Cost Account Number	Description or Item	Plant	Labor	Material
	Erosion Control			
	Backfill Random and Pervious	E	E	E
	Compacted Fill	E	E	E
	Dumped Rock Fill	E	E	E
	Riprap, Hand Placed with Bedding	E	E	E
	Grouting	C	C	C
	Filter, Sand and Gravel	E	E	E
	Pipe	E	E	C or S
	Drains and Gutters, Open	E	E	C

Table B11

Checklist for Bank Stabilization

Cost Account Number	Description or Item	Plant	Labor	Material
16	Bank Stabilization			
	Preliminary Work			
	Mobilization and Demobilization	E	E	E
	Clearing and Grubbing	E	E	E
	Removal and Protection of Obstructions	E	E	E
	Rehabilitation of Existing Stone Work	E	E	E
	Earthwork and Foundation			
	Excavation, Common	E	E	E
	Excavation, Channel	E or D	E or D	E
	Excavation, Structural	E	E	E
	Fill	E	E	E
	Grading	E	E	E
	Training Dike	E	E	E
	Embankment	E	E	E
	Riprap Slope Treatment			
	Gravel Bedding	E	E	E
	Stone	E	E	E
	Wooden Mattress Protection			
	Willow Mattress	E	E	E
	Lumber Mattress	E	E	E
	Stone on Mattress	E	E	E
	Stone Upper Bank Paving	E	E	E
	Gravel or Crushed Stone	E	E	E
	Asphalt Slope Protection			
	Asphalt Pavement	E	E	E
	Gravel or Crushed Stone	E	E	E

Table B11 (cont'd)

Checklist for Bank Stabilization

Cost Account Number	Description or Item	Plant	Labor	Material
	Articulated Concrete Protection			
	Articulated Concrete Mattress			
	Casting Mattress	E	E	E
	Cement	E	C	C
	Reinforcing Steel	E	S	S
	Placing Mattress	E	E	E
	Pile Dike Protection			
	Wood Piles, Untreated	E	E	E
	Wood Piles, Treated	E	E	E
	Piling Stringers	E	E	E
	Stone Along Pile Structure	E	E	E
	Stone Fill Dike	E	E	E
	Stone Revetment	E	E	E
	Associated Items			
	Ties, Clump	S	S	S
	Hardware	E	S	S
	Culverts	E	E	C
	Fence	E	E	S
	Lashing, Dike Terminal	E	E	S
	Removing Piles	E	E	E

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