



US Army Corps
of Engineers
New York District

DRAFT

General Design Memorandum

Passaic River Flood Damage Reduction Project

Appendix D - Cost Engineering

September 1995

PASSAIC RIVER FLOOD DAMAGE REDUCTION PROJECT

GENERAL DESIGN MEMORANDUM

APPENDIX D

COST ENGINEERING

TABLE OF CONTENTS

<u>Description</u>	<u>Page</u>
SECTION 1 - INTRODUCTION	
1.1 General	D-1
1.2 Basis for Estimates	D-2
SECTION 2 - FORMULATION OF PROJECT FIRST COSTS	
2.1 First Costs	D-3
2.2 Unit Costs	D-3
2.2.1 Quantity and Cost Curves	D-4
2.2.2 Tunnel Alignment Selection	D-4
2.2.3 Tunnel Liner Study	D-5
2.2.4 Tunnel Muck Removal Study	D-6
2.2.5 Tunnel Consultants Report - G.B. Knight	D-7
2.2.6 Material Resource Study	D-7
2.2.7 Material Disposal Study	D-7
2.3 Tunnel Costs	D-8
2.4 Tunnel Construction	D-9
2.4.1 Main Tunnel	D-9
2.4.2 Contract A	D-10
2.4.3 Contract B	D-11
2.4.4 Contract C	D-11
2.4.5 Contract D	D-11
2.5 Spur Tunnel	D-11
2.6 Workshafts	D-12
2.6.1 General	D-12
2.6.2 Workshaft #3	D-12
2.6.3 Vent Shaft #6	D-12
2.6.4 Workshaft #2	D-12
2.6.5 Hook Hole Shaft #5	D-13
2.6.6 Workshaft #2B	D-13
2.6.7 Workshaft #2C	D-14
2.6.8 Workshaft #4	D-15
2.7 Inlet and Outlet Structures	D-15
2.7.1 Pompton (Main) Inlet	D-15
2.7.2 Passaic (Spur) Inlet	D-15
2.7.3 Newark Bay Outlet	D-15

PASSAIC RIVER FLOOD DAMAGE REDUCTION PROJECT

GENERAL DESIGN MEMORANDUM

APPENDIX D

COST ENGINEERING

TABLE OF CONTENTS

<u>Description</u>	<u>Page</u>
2.8 Tunnel Boring Machine Issues	D-16
2.8.1 General	D-16
2.8.2 Service Requirements	D-16
2.8.3 Production Rates	D-17
2.8.4 Cutter Wear Estimates	D-17
2.9 Muck	D-17
2.9.1 General	D-17
2.9.2 Nature of Materials	D-17
2.9.3 Methods of Removal	D-17
2.9.4 Surface Transportation	D-17
2.9.5 Potential Usage	D-17
2.10 Rock Support	D-18
2.10.1 General	D-18
2.10.2 Rock Bolts	D-18
2.10.3 Strapping	D-19
2.10.4 Welded Wire Mesh	D-19
2.10.5 Steel Ribs	D-19
2.10.6 Tunnel Lining	D-20
2.11 Grouting	D-20
2.12 Ventilation	D-21
2.13 Land Requirements and Acquisition Cost	D-21
2.14 Lump Sum Items	D-21
2.15 Contingencies	D-21
2.16 Planning, Engineering and Design	D-22
2.17 Construction Management	D-23
2.18 Interest During Construction	D-23

SECTION 3 - ANNUAL CHARGES

3.1 Project Life	D-25
3.2 Interest and Amortization	D-25
3.3 Major Replacement	D-25
3.4 Operation and Maintenance	D-25
3.5 Estimated Annual Charges	D-27

SECTION 4 - COST SHARING RESPONSIBILITIES

4.1 General	D-28
4.2 Cost Allocation	D-28

PASSAIC RIVER FLOOD DAMAGE REDUCTION PROJECT

GENERAL DESIGN MEMORANDUM

APPENDIX D

COST ENGINEERING

TABLE OF CONTENTS

LIST OF TABLES

<u>Number</u>	<u>Title</u>
DT-1	Summary of Project First Costs
DT-2	Estimated Annual Charges
DT-3	Project Cost Sharing
DT-4	Comparison with Approved PB-3 Estimate (First Cost)
DT-5	Comparison with Approved PB-3 Estimate (Fully Funded Cost)

LIST OF FIGURES

<u>Number</u>	<u>Title</u>
DF-1	Passaic River Flood Damage Reduction Project Plan
DF-2	Design and Construction Schedule, Proposed Plan of Protection
DF-3	Tunnel Alignment

ATTACHMENT M-CACES

<u>Number</u>	<u>Title</u>
DA-1	Phase I Tunnel - Contract A
DA-2	Phase I Tunnel - Contract B
DA-3	Phase I Tunnel - Contract C
DA-4	Workshaft #2
DA-5	Workshaft #2B
DA-6	Workshaft #2C
DA-7	Workshaft #3
DA-8	Workshaft #4
DA-9	Pompton (Main) Inlet
DA-10	Passaic (Spur) Inlet
DA-11	Fairfield Road Bridge

GENERAL DESIGN MEMORANDUM

APPENDIX D

COST ENGINEERING

TABLE OF CONTENTS

ATTACHMENT M-CACES

DA-12	Newark Bay Outlet
DA-13	Phase III Tunnel - Contract E
DA-14	Kearny Point Levee/Floodwall System
DA-15	Lister/Turnpike/Doremus Levee/Floodwall System - Section A
DA-16	Doremus Ave Levee/Floodwall System - Section B
DA-17	South 1st Street Levee/Floodwall System
DA-18	Pinch Brook Levee/Floodwall System
DA-19	Passaic River Channel Modification
DA-20	Great Piece Weir
DA-21	Passaic #2A Levee/Floodwall System
DA-22	Deepavaal Channel Modification
DA-23	Rockaway #1 Levee/Floodwall System
DA-24	Rockaway #2 Levee/Floodwall System
DA-25	Rockaway #3 Levee/Floodwall System
DA-26	Passaic #10 Levee/Floodwall System
DA-27	Phase II Tunnel - Contract D
DA-28	Tunnel Operation Center
DA-29	Ramapo Channel Modification
DA-30	Pequannock Channel Modification
DA-31	Pequannock - Ramapo Levee/Floodwall System
DA-32	Wanaque Channel Modification
DA-33	Pequannock Weir
DA-34	Vent/Hook Hole Shaft #5
DA-35	Vent Shaft #6
DA-36	Pompton Inlet Bypass Channel

PASSAIC RIVER FLOOD DAMAGE REDUCTION PROJECT

GENERAL DESIGN MEMORANDUM

APPENDIX D

COST ENGINEERING

SECTION 1 - INTRODUCTION

1.1 General

This appendix documents the development of, and contains the estimate of first costs for the Passaic River Flood Damage Reduction Project. Methods for deriving the costs of various project elements of the recommended plan are discussed.

The overall cost estimate is comprised of 36 individual M-CACES estimates. Summary sheets for Owner, Indirect and Direct costs reported to the sub-feature level are shown in Attachment M-CACES at the end of this appendix.

The development of the overall project cost was the joint effort of a large team of estimators headed by the Civil Design Team of the Passaic River Division. This team and their costs estimating responsibilities included:

- a). Passaic River Division, Civil Design Team
 - Overall project coordination
 - Main and Spur tunnel
- b). New York District, Cost Engineering Branch
 - Project review
- c). Nashville District, Cost Engineering Branch
 - Inlets
 - Outlet
 - Workshafts
- d). Philadelphia District, Cost Engineering Branch
 - Pump Stations
 - Closure Structures
 - Pequannock Weir
- e). Wilmington District, Cost Engineering Branch
 - Passaic #10 Levee/Floodwall
- f). The RBA Group
 - Tidal Area Levees and Floodwalls
 - Central Basin Levees and Floodwalls
 - Deepavaal Brook Channel Improvements
- g). Arora Associates/The RBA Group (a joint venture)
 - Central Basin Levees and Floodwalls
- h). URS Consultants
 - Great Piece Weir

- i). Associated Cost Engineers, Inc.
 - Fairfield Road Bridge
 - Approach Channels to Main and Spur Inlets
 - Pequannock-Ramapo Levee/Floodwall
- j). Drs. Tor Brekke, Ron Heuer, Gregg Korbin and Mr. Richard Humphries
 - Tunnel Consultants
- k). Baltimore District, Real Estate Division
 - Real Estate costs
- l). Hill International, Inc.
 - Account 30. Planning, Engineering and Design
 - Account 31. Construction Management

1.2 Basis for Estimates

All estimates are based on October 1994 price levels. The work quantities for the considered plan of improvement have been developed from the detailed plans as shown on Figures 1 through 42 of the Main Report.

SECTION 2 - FORMULATION OF PROJECT FIRST COSTS

2.1 First Costs

First costs include the charges arising from the construction of each individual project element as well as the cost of contingencies, engineering, design, supervision and administration. The detailed estimates include such items as: lands, relocations, construction of a bridge, channel modifications, levees, floodwalls, pump stations, and by means of a tunnel boring machine (TBM), the construction of a 21 mile, 42-foot diameter and a 1.2 mile 23-foot diameter concrete lined tunnel. The summary of project costs for the recommended plan of protection is shown in Table D-1. Detailed M-CACES estimates of project first costs for the recommended plan of protection are presented in Attachment - M-CACES, DA-1 through DA-36.

2.2 Unit Costs

Unit costs for material and equipment were developed and based upon: the Unit Price Book (UPB) associated with M-CACES, current bid unit costs (adjusted appropriately for the size of project, construction period and inflation), projects of a similar nature, contact with manufacturers, dealers, distributors and contractors in the vicinity of the proposed project.

Unit costs were also based on the results and recommendations of various reports made specifically for the for local areas of the Passaic River Basin. A few of the more significant reports that dealt strictly with costs were:

- a). "Quantity and Cost Curves", A.G. Lichtenstein & Assoc., Fairlawn, N.J., November 1979
- b). "Tunnel Alignment Selection", Passaic River Division, Hoboken, N.J., May 1992
- c). "Tunnel Liner Study", Project Time and Cost, Arlington, Virginia, December 1992
- d). "Tunnel Muck Removal Study", Project Time and Cost, Arlington, Virginia, January 1993).
- e). "Recommended General Method and Equipment for Passaic River Tunnel", G.B. Knight, Frankfort, Illinois, March 1993
- f). "Material Resource Study", The RBA Group/Arora and Associates, P.C., Oct 1994
- g). "Material Disposal Study", Hill International, Inc. with HNTB and Dames and Moore, May 1995

The following paragraphs summarize the above cited reports along with their significant findings on which many of the unit costs were based.

2.2.1 Quantity and Cost Curves. Generalized quantity and cost curves were developed in 1979 for structural and nonstructural flood damage reduction measures in the Passaic River Basin. The designs of structures analyzed for the cost curves were developed to anticipate foundation conditions and dewatering situations likely to occur in the Passaic River Basin based on existing foundations information. These curves served as an estimating tool for quantities and cost in the pre-feasibility screening of alternative solutions under study at that time.

2.2.2 Tunnel Alignment Selection. The purpose of this paper was to document the selection of a specific tunnel alignment for the authorized Passaic River Flood Damage Reduction Project. The Water Resources Development Act of 1990 modified the Corps' 1987 Recommended Plan by extending the tunnel alignment into Newark Bay. Upon this authorization, several alignment options were reviewed and a final alignment was selected. Five of the tunnel alignments considered were described in this document. In presenting this information, the objective was to give decision makers an understanding of the formulation process used to determine the selected tunnel alignment.

The paper first provides a background of the parameters that were significant in the formulation of the 1987 Recommended Plan. These parameters were then used to establish the context of the current analysis as applied to the 1990 authorized project. Workshaft location and logistical upgrading of the surrounding infrastructure have long been recognized as very important factors to construction of the tunnel, the keystone of the Passaic River Flood Damage Reduction Project. In fact, due to the heavily urbanized nature (industrial, commercial, and residential) of the Passaic Basin, tunnel alignments were significantly influenced by the siting of the workshafts. The necessary removal of material from the tunnel face and an efficient use and/or disposal of up to 10 million cubic yards of excavated rock would require great flexibility in the movement of men, trucks, and heavy equipment for the construction of the tunnel. These requirements significantly reduce the number of potential sites which could be used for removal of excavated tunnel materials.

The importance in workshaft site selection can not be understated. Contractors bidding on this project should have the greatest freedom possible in terms of work area, staging area and flexibility of transport method. Any limitations placed on the contractor will ultimately show up in the bid price. Therefore, after exhaustive map and field searches for workshaft locations, many of the sites along the possible tunnel routes were found to be substantially less than ideal. They were however, the best sites for the particular alignment and would bear additional costs to the project as

well as inconveniences to the surrounding environment and communities. These conditions were costed where possible but otherwise are qualified in the workshaft description.

At the end of the alignment selection paper, conclusions and recommendations were presented. Cost estimates, which were developed for each alternative alignment, reflect a detailed analysis which include adjustments for the length of tunnel bored through the harder basalt and softer sandstone/shale formations. All alternative alignments increase the length of the more costly basalt tunnelling by increasing the approach angle of the TBM to the basalt formations. This results in a longer tunnel bore through the harder rock formation. Field investigations of potential workshaft sites were also made and the availability of these sites were thoroughly reviewed. Based on the information accumulated, the selected alignment would be the most practicable, feasible and also the least costly.

2.2.3 Tunnel Liner Study. This study was performed for the purpose of preparing a construction cost analysis between using a precast concrete segmental tunnel liner versus a poured in place concrete tunnel liner. Each liner type was to be analyzed for both cost and constructability for three alternative inside diameters. These diameters were 35, 40, and 45 feet. Completion of the study consisted of two primary products.

- 1). A market research study into the cost, constructability, and construction duration of the above mentioned tunnel liner systems.
- 2). A written report which includes a recommendation identifying the most cost effective alternative.

Productivities within the tunnel were based on the assumption that no constraints would exist as a result of muck removal capacities. Additional issues discussed in this report include quality control, project duration, and tunnel construction trends. The following represents the principal conclusions reached:

- 1). Under the competent rock conditions anticipated for this project, cast-in-place and precast tunnel construction methods would both be feasible alternatives.
- 2). Based on the design specifications and productivity assumptions used for this analysis, a cast-in-place concrete tunnel liner is a more cost effective alternative for the Passaic River Flood Damage Reduction Project when compared to the precast concrete segmental tunnel liner method.

- 3). Based on field research, more competitive bidding would result if tunnel liner construction methods are left open to the contractors. In case of tunnel liner methods, precast and cast-in-place options could both be specified. However, the presence of many joints in the precast segmented lining will increase hydraulic friction valves of the lining surface and reduce floodwater carrying capacity. Therefore, the precast tunnel diameter would be approximately 2 feet greater than the cast-in-place tunnel diameter in order to transport the same flows for a cast-in-place tunnel.
- 4). Based on the limited area available for workshaft site locations and local labor experience, advantages in quality control may be realized pouring a monolithic concrete liner.
- 5). Because the lining is constructed concurrently with the boring operation, the precast tunnel liner method would require a shorter construction duration than the cast-in-place tunnel liner method.
- 6). The current trend in the United States is toward progressive development and improvement of established methods. The precast and cast-in-place tunnel liner methods are both successfully proven construction techniques for water conveying tunnels in the United States.

2.2.4 Tunnel Muck Removal Study. The purpose of this study effort was to optimize the cost for transporting muck within an underground tunnel. The tunnel muck would be delivered to a construction workshaft for removal to the surface. The two options considered were horizontal sidewall and vertical upshaft conveyors, and tunnel muck railroad trains and vertical lift skipbuckets. Principal goals of this effort were:

- 1). Conduct a market research study analysis as to the cost and effectiveness of using each of the two options for a large diameter tunnel.
- 2). Developing a written report which would include recommendations that identify the most cost effective alternative.

Design recommendations and budgetary quotations were provided by four major vendors. A field survey of several completed and ongoing tunnel projects in the United States was also conducted. Based on the market survey and vendor quotations the following conclusions were reached:

- 1). If designed properly for the specific project, rail

systems and conveyor systems would both viable options. Both systems have proven efficiency records and are currently used in the tunnel construction industry.

- 2). Based on vendor quotations, market survey, and other considerations, a conveyor system would be the more cost effective alternative for muck removal.
- 3). Based on field research, more competitive bidding would result if tunnel construction methods were left open to the contractor.

2.2.5 Tunnel Consultants Report - G.B. Knight. This report reviewed the initial cost estimate as presented in the Phase I GDM. Particular attention was paid to the Tunnel Boring Machine, the muck removal method, the ventilation system, the tunnel railroad system and the pumping requirements. Other items considered were the availability of aggregates, cement, concrete and electric power. Labor rates and local labor unions and manning requirements were also checked.

The main conclusion of this report was that a continuous conveyor belt system would be the most cost effective means of transporting the excavated muck.

2.2.6 Material Resource Study. The Materials Resource Study describes the investigations performed detailing the commercial sources available for materials. Materials required would include concrete for tunnel lining, inlet and outlet structures, weirs, floodwalls; earth-fill levees and embankments. The study purpose was to determine probable availability and cost of numerous materials with the principal area being read-mix concrete, portland cement, concrete aggregates, fly ash, riprap, graded stone, earth borrow and clay, steel sheet piling, H-piles and reinforcing steel.

2.2.7 Material Disposal Study. This study was the investigated the character, transportation and disposal of material excavated during construction of the many project elements. The investigations include a description of the quantity and character of the material, alternative methods of transportation outside the tunnel, potential disposal sites, the effect of possible hazards, toxic and radiological waste (HTRW) contamination of the excavated material, and the economics of disposal. The goal of the study was to provide the Passaic River Division with the feasibility of, recommendation for and the cost of disposing of excess excavated materials.

2.3 Tunnel Costs

Early in the Phase I GDM effort, Jenny Engineering Corp. was contracted to make an analysis of tunneling conditions, constructability, and cost estimates. This was performed in order to determine the feasibility of proceeding with a tunnel diversion plan which was considered in previous reports in 1948, 1962, 1969 and 1972. The analysis was premised on the Beatties Dam to Nutley tunnel route for which subsurface information was available in the 1962 Passaic River report. Additional subsurface information was developed from a seismic study aimed at determining a rock profile along this tunnel route. Design and costs were developed for this route for tunnel diameter sizes ranging from 25 to 55 feet in diameter. In addition to determining costs by the traditional drill and shoot construction methods, the tunnel boring machine (TBM) construction method was also estimated for sizes up to 35 feet, the largest size machine in current use in 1979. These conditions were also extrapolated to other tunnel routes proposed in the plan of study. An additional investigation also estimated costs of an inverted siphon tunnel alternative as compared to a grade line tunnel which was initially estimated.

In 1980, a subsequent field trip was made, in coordination with NED Corps Personnel, to the Park River Tunnel site in Hartford Connecticut. This tunnel, which was an inverted siphon, was a 22-foot diameter tunnel constructed by using a tunnel boring machine (TBM). This trip substantiated the basic assumptions as to constructability and rates of progress made by Jenny Engineering in their siphon tunnel analysis.

Based on this earlier work, cost curves were developed to provide cost per linear foot versus tunnel diameter. It should be noted that due to the importance of the tunnel costs, and at CENAD's suggestion, an international firm involved in tunneling technology, Harza Engineering Company (who had experience on the Tunnel and Reservoir Project (TARP) in Chicago), was consulted on the basic assumptions of constructability and costs as made by Jenny Engineering. The results of their study confirmed the methods and assumptions for TBM construction, and in fact stated that the TBM "optimistic" estimate was very realistic. Harza's evaluation strongly confirmed that the method of excavation most likely to be considered by the bidding contractor would be by tunnel boring machine (TBM). It was also their opinion that TBM's would be capable of boring tunnels 40 to 45 feet in diameter by the mid 1990's.

A field trip in 1983, attended by CENAN and CENAD personnel, to the Culver - Goodman Tunnel in Rochester, N.Y. also verified Jenny's assumptions as to the progress rates obtainable, concerning shotcreting, rockbolting, etc.

The final Stage 3 study by Jenny Engineering involved a more detailed investigation into the cost of the tunnel. Due to the unique nature and magnitude in size and scope, together with the scarcity of recent bid unit costs from projects of a similar nature, the unit costs in this particular estimate were arrived at by calculating separable direct cost, indirect cost and plant and equipment (as outlined in ER 1110-2-1302).

Specifically the direct cost was the cost of direct labor which consisted of standard crew sizes for different types of tunnel work. The crew makeups recognized productivity, union requirements and prevailing New Jersey wage rates and operating costs. The Jenny estimate also included equipment operation along with any necessary supplies, materials and off site muck removal.

The indirect cost include all costs not charged to the other separable divisions of cost. Indirect cost includes project supervision, job engineering, office payroll and expenses, insurance, taxes and bond premiums.

The cost of plant and equipment covers the move-in and invoice costs of the plant and the equipment necessary to do the work plus the cost of installation. A salvage value where applicable was deducted from the total cost to obtain the net plant and equipment job cost. Those items of plant and equipment which cannot be attributed to a single segment of the project were allocated to each major construction item based on their percentage of the total direct cost.

The tunnel estimate was separated into five individual contract areas to both lessen the effect of interest during construction and also to anticipate how a job of this magnitude would be let out for contract. It was also presented as such because future planned construction would have the lower portion of the tunnel functioning as soon as possible to maximize the benefits that would be generated prior to the base year (end of project construction). This analysis is further discussed in paragraph 2.18, Section 2.

Refer to Table DT-1 for project first cost and Figure DF-2 which shows estimated construction durations.

2.4 Tunnel Construction

2.4.1 Main Tunnel The Main Tunnel runs from the Pompton Inlet near the Jackson Avenue Bridge to the outlet at Newark Bay. The total horizontal distance would be 107,747 feet (20.4 miles) from the center line of the Pompton inlet to the center line of the outlet. The tunnel would be circular with an inside diameter of 42 feet. In order to accommodate a 15 inch thick concrete liner the minimum excavated dimension of the tunnel would be 44.5 feet. The

proposed alignment is shown on Figure DF-3.

Several factors influenced the final alignment of the Main Tunnel. The availability of work shaft locations and their proximity to roads and railroads suited to transportation of the tunnel muck was critical in this highly urbanized area. Minimizing the length of tunnel which had to be driven through the hardest rock was also an important consideration in holding down construction costs. Extension of the tunnel to Newark bay to avoid perceived adverse impacts in some of the communities was another key influence on the current layout. Hydraulic considerations also dictated that no curve in the tunnel be constructed with a radius less than 500 feet measured at the inside of the bend. However, maneuverability of the tunnel boring machine (TBM) governed for horizontal curves and no curve radius would be less than 1,500 feet. The invert of the Main Tunnel varies between elevation 9 at the inlet to -408'NGVD at Work Shaft 2C near the outlet. This variation stems from geotechnical and operational considerations. The need to avoid deep, glacially generated buried valleys in the lower portion of the tunnel mandated the lowering of the invert to elevation -408' National Geodetic Vertical Datum (NGVD). A practical rule of thumb was to keep a minimum of one tunnel diameter of sound rock above the crown of the proposed tunnel to ensure that there would be supporting rock above the crown free of stress concentration. To facilitate dewatering of the tunnel, the invert climbs in either direction from a low point at the dewatering pump station located at Work Shaft 2C. The degree of slope to accommodate the elevation changes were the result of mathematical hydraulic modeling. Future refinements to the proposed location of the Main Tunnel should be relatively minor, provided the work shaft locations are available in the future and the proposed outlet remains in Newark Bay.

Four separate contracts would be required for construction of the Main Tunnel under the proposed plan:

- o Phase I - Contract A
- o Phase I - Contract B
- o Phase I - Contract C
- o Phase II - Contract D

2.4.2 Contract A. This contract initiates at station 0+00 by the Outlet in Newark Bay. The TBM would bore toward station 163+15 at the end of a drill and blast section connecting to Workshaft #2B. At Workshaft #2B, the TBM would be removed and transported to the Pompton Inlet. It was estimated that approximately 2,000 feet of tunnel, from Workshaft #2C to the Outlet in Newark Bay, would be excavated by drill and blast methods using multiple drifts. The remainder of the excavation in contract A would be by TBM. All tunnel muck would be removed through Workshaft #2C.

2.4.3 Contract B. This contract begins with a TBM starting at Workshaft #2B, station 163+15 working toward station 483+98 at the end of a drill and blast section connecting to a "hook hole", shaft #5. There would be no muck from tunnel mining removed through shaft #5. Drill and blast sections would be excavated on either end to facilitate start up with the TBMs and their disassembly. The TBM is to complete the upslope drive from Workshaft #2B to Workshaft #5, be partially disassembled at Workshaft #5, and backed down to Workshaft #2B where it would be removed. Total drill and blast footage was estimated at 550 feet. The remaining 31,810.4 feet would be excavated using a TBM. All tunnel muck would be removed through Workshaft #2B.

2.4.4 Contract C. This contract extends from station 483+98 at Hook Hole shaft #5 to station 843+47 at the end of a drill and blast section connecting to Workshaft #3. A drill and blast section 654 feet long is proposed in the middle of this contract at Work Shaft #2 at station 623+76. This drill and blast section would be advanced through the faulted zone by multiple drift methods and to provide a starter tunnel for the TBM. The TBM would complete the slightly downslope drive from Workshaft #2 to Workshaft #5, be partially disassembled at Hook Hole shaft #5, and backed down to Workshaft #2, where it will be turned around to make the drive toward Work Shaft #3. By using this construction technique, the remaining 21,644 feet of tunnel would be excavated by TBM. All tunnel muck would be removed through Workshaft #2.

2.4.5 Contract D. This contract extends from station 843+47 at Work Shaft #3 to station 1077+47, at the Pompton Inlet. It has drill and blast sections on either end totaling 562 feet, much of this at the inlet end to excavate the 52 feet de-aeration chamber as required for hydraulic considerations. This drill and blast section would also provide a short starter section for the TBM. The TBM would proceed from the Pompton Inlet shaft south to Workshaft #3 where it would be disassembled and removed from the tunnel. To complete the tunnel 22,838 feet would be excavated by TBM. The tunnel muck would be removed through the shaft constructed for the Pompton Inlet.

For this construction sequence, it would be necessary to have three separate Tunnel Boring Machines (TBM's) operating simultaneously for the Main Tunnel.

2.5 Spur Tunnel

The Spur Tunnel would also be a separate construction item, **Contract E.** It would connect an inlet on the Passaic River near State Route 46 and Fairfield Road to the Main Tunnel at station 785+15. The TBM would bore from Workshaft

#4 near the spur/main tunnel junction to the spur tunnel inlet on the Passaic River for a distance of 6,688 feet. The inside finished diameter of the Spur Tunnel would be 23 feet. It would also have a 15 inch thick concrete liner so the minimum excavated diameter would be 25.5 feet. This alignment was roughly the shortest straight line distance between the Spur Inlet and the main tunnel that would still accommodate the construction of a work shaft. A curved transition section having a minimum radius of 500 feet would redirect the straight portion of the Spur to intercept the Main Tunnel at an acute angle for hydraulic efficiency. The invert of the Spur Tunnel would be straight and sloped to connect with the invert elevation of the main tunnel.

2.6 Workshafts

2.6.1 General. Vertical shafts would be constructed along the tunnel alignment for ingress and egress of men, materials and equipment during construction. Because this is a highly urbanized area, major construction activity, which is primarily the removal of excavated rock from tunnel, will be limited to five locations. These are Workshafts #2C, #2B and #2. The Pompton Inlet, and Workshaft #4 for the spur tunnel. After the tunnels and structures are completed, it was planned to use all of shafts as either maintenance access shafts and/or venting locations releasing air from the operating tunnel.

2.6.2 Workshaft #3. This 45 foot inside diameter exit shaft would be in a heavily wooded area near an industrial park, and a golf course. It would be immediately adjacent to a narrow access road to the Wayne Municipal Yard. It would be located on the Main Tunnel center line at tunnel station 843+47. The top of ground elevation is approximately 174 and the tunnel invert is -7.73. This 182 foot deep shaft would be primarily used for removal of the TBMs and as a vent shaft. Numerous trees would be cleared. In addition, two small unnamed drainage courses would require protection from runoff from this site.

2.6.3 Vent Shaft #6. This 15 foot inside diameter vent shaft would be constructed near the intersection of the Spur and the Main Tunnels. It would be located at tunnel station 783+00, the same piece of wooded property as Workshaft #4. Top of ground elevation is approximately 180 and the tunnel invert would be approximately -12.0'NGVD, making the shaft 192 feet in total depth. Since this shaft is not needed for the construction, it could be constructed at any time prior to operation of the tunnel.

2.6.4 Workshaft #2. Workshaft #2 would be located on the floor of an abandoned quarry, on the property of Montclair State Teachers College. This major work shaft would be located at tunnel station 623+76. The ground

surface elevation at this location is approximately 330'NGVD. The estimated total depth of this shaft to tunnel invert would be 349 feet. During construction, this 45-foot inside diameter concrete lined shaft would be used for TBM access and removal, muck removal, general construction support, and concrete placement. This shaft is also adjacent to a commuter Conrail track so it is planned to locate a switch-yard to facilitate muck transportation by rail. Upon completion of the tunnel this shaft would be used as a maintenance access shaft.

Additional surface works are also planned at this location. These facilities include the master control center for the entire tunnel system, maintenance facilities, and a visitor's center. The area surrounding this site has scattered trees which would have to be cleared. During heavy rainfall the site partially fills with water up to a depth of 5 feet. Backfill of the site and drainage would have to be provided. The most logical approach to developing this site would be to use it as a spoil area. This has two advantages. First, it minimizes the haul distance and placement costs for approximately 500,000 cubic yards of excavated material and second, it would result in several acres of developable land upon completion of construction. There is a small ponded area adjacent to the abandoned quarry wall. This surface water area would be lost as a result of backfilling the quarry.

2.6.5 Hook Hole Shaft #5. This 15 foot inside diameter shaft #5 is otherwise known as the "hook hole". It would be located adjacent to the Garden State Parkway near Broad Street in Bloomfield at tunnel station 483+98. Top of ground elevation 165.9'NGVD and invert elevation -25.6, making the total depth of the shaft at 191.5 feet. The location would be adjacent to the return ramp for the service center and is very constricted. Expansion of the work area to accommodate operations other than disassembly of the TBMs using a 100 ton crane would be difficult. However it would be an advantage to be able to deliver concrete for the cast in place liner through this shaft. Upon completion of the construction, this shaft would be kept open as a vent shaft. The area surrounding this site is in a wooded area adjacent to the Garden State Parkway and a rest stop. Clearing and grubbing would be required and would adversely affect the property. Security fencing would also be required.

2.6.6 Workshaft #2B. This site is a major work shaft located at tunnel station 163+15 at the end of Bergen Avenue in Kearny. The ground surface elevation at this location is approximately 6. The estimated total depth of this shaft to tunnel invert would be 418 feet. During construction of the tunnel, this 45 foot inside diameter concrete lined shaft would be used for TBM access and removal, muck removal, general construction support, and concrete placement. This

shaft is adjacent to the Conrail tracks so it also planned to locate a switch-yard to facilitate muck transportation by rail. Upon completion of the lower portion of the tunnel, an extension would be added to the top of the shaft to raise it to elevation 55 so that it would also function as a vent.

The area surrounding the proposed shaft is a wooded site containing abandoned waste dumps of uncertain content. It would be desirable to minimize the tree clearing, grubbing, and other ground disturbing operations during construction of the rail yard (needed for muck handling) would have to be constructed on engineered fill. The site is adjacent to Frank Creek, which is heavily polluted and would require protection from runoff from the construction site. Security fencing would be required at all of the sites.

2.6.7 Workshaft #2C. The center line of Workshaft #2C is located on the Main Tunnel at station 20+80 on the tip of Kearny Point. It is a 15 ft. inside diameter, concrete-lined shaft. During construction of the tunnel it may be used for muck removal, dewatering, personnel and equipment access, concrete placement, and ventilation. This shaft would be located adjacent to Newark Bay and it was planned that offshore loading and transportation of muck would be utilized. After construction it will be kept open as a vent shaft. The total depth of this shaft to tunnel invert is approximately 419 feet.

In addition to the 15 foot shaft, a 56-foot inside diameter dewatering pump station shaft adjacent to the above described shaft would be constructed at this site. This shaft would be the largest of all the proposed shafts. It was offset from the main tunnel approximately 82 feet at tunnel station 21+60 adjacent to Workshaft #2C on Kearny Metro Water property. The estimated total depth of the shaft to the pump chamber floor is 432 feet. Ultimately it would be used to connect the underground pump chamber to the shop complex on the surface and would house dual elevators, staircases, ventilation, dewatering pipes and access wells. During construction, it would be used for lowering the tunnel boring machine to the tunnel level and any other function that could not be accommodated by nearby Workshaft #2C.

The area surrounding the proposed shaft is largely covered with phragmites vegetation and would require little clearing. The site has been used for disposal by a chipper collection service. This very compressible material would have to be removed in some areas to provide firm foundations for construction of an operations building associated with the dewatering pump station. This area would also require an extended collar at the work shafts above a set storm surge elevation.

2.6.8 Workshaft #4. Workshaft #4 is located in the curved section of the Spur Tunnel which connects with the main tunnel. The shaft would have an inside diameter of 23 feet. Top of ground elevation is approximately 180'NGVD and the tunnel invert would be approximately -12'NGVD making the shaft 192 feet in total depth. It would be used for TBM access, muck removal, concrete placement, and general construction support for the spur.

The area surrounding the workshaft site is in a heavily wooded area near a commercial area between Interstate 80 and Highway 46. Numerous trees would have to be cleared. In addition a small unnamed drainage course would require protection from runoff from these sites. The access corridor to Highway 46 should be located to minimize clearing. It is important to keep the construction activities clear of the Wanaque Aqueduct which cuts through the property North of the work shafts.

2.7 Inlet and Outlet Structures

2.7.1 Pompton (Main) Inlet. The Pompton Inlet would be connected directly to the 42 foot diameter main tunnel and would be located at the head of the Pompton River near its confluence with the Ramapo and Pequannock Rivers. The proposed location would be on the left bank of the Pompton River, just upstream of the Pompton Plains Cross Road (Jackson Avenue) Bridge in Wayne Township. The shaft would be used as a work shaft for muck removal while constructing of the tunnel and then constructed into the inlet.

2.7.2 Passaic (Spur) Inlet. The Spur Inlet shaft would connect directly to the 23 ft diameter spur tunnel and would be situated along the left bank of the Passaic River between the Two Bridges Road bridge and Interstate Route 80 bridge. The area is just below the confluence with the Pompton River and is located in the township of Wayne. To utilize this site, a bridge for Fairfield Road would be built across the approach channel to the inlet structure. This shaft would be used to remove the spur tunnel TBM after tunnel excavation has been completed. The shaft would then be converted into an operating inlet.

2.7.3 Newark Bay Outlet. The 45 foot inside diameter Newark Bay Outlet would be located in the upper end of Newark Bay, where the Passaic and Hackensack Rivers meet. The outlet structure would be situated about 1,850 ft offshore and would extend from a depth of about 20 ft below sea level to about 10 ft above sea level. This structure would be of a float in type construction and would also be a stand alone construction element since no tunnel muck or TBM would be removed from this shaft. However, the option remains open for tunnel muck or TBM removal.

2.8 Tunnel Boring Machine Issues

2.8.1 General. Although conventional excavation using drilling and blasting techniques is clearly feasible and would offer greater flexibility in the case that adverse geologic conditions are encountered, it appears that a TBM is clearly the most economical method. A TBM of 44.5 feet in diameter is generally unprecedented at this time, machines 40' and larger have been successfully used in Europe and it is well within the technology of the manufacturers to produce this machine. The geologic conditions present along the alignment are also believed to be suitable for this alternative. All the well known positive reasons for the TBM excavation, such as increased production, less temporary support, and less concrete lining as the result of reduced overbreak, are present for this project. With such a large project it would be necessary to have several contracts with three TBM's working concurrently. Under the proposed plan, there would be a total of 5 contracts involving tunnel construction, 4 on the Main Tunnel and 1 on the Spur.

Three contractual precautions are recommended:

- o Pre-qualification of the bidders.
- o Placing bid documents in escrow.
- o Use of Contract Disputes Review Board.

2.8.2 Service Requirements. The TBM's proposed for use on the Passaic Tunnel are slightly larger than any hard rock machines built to date. Specific design details would be left to the manufacturers but certain requirements are anticipated. These machines should include probe hole capability for drilling ahead of the face, drill rigs installed on either side of the main beam for rock support installation immediately behind the cutter head and, possibly, a rib-erector system. The cutter heads may be equipped with back-mounted, recessed cutters. Among other considerations, the specific cutter head design would have to take into account, mixed face conditions, rock hardness, and, in some basalt formations, the closely jointed blocky nature of the rock mass. The muck gathering system may have to accommodate some larger loose blocks that dislodge from the face during boring. Generally a flat faced design would likely provide greater face stability. Variable speed drive and automatic thrust control are two features that would be highly desirable if not essential on the TBMs to accommodate the wide range of hardness and strength in the rocks to be bored.

Delivery of a TBM under consideration would likely to take 15 months. It is also reasonable to require that a spare main bearing be available during the life of the contract since replacement of this item could result in a significant downtime of an individual TBM in the absence of a spare.

2.8.3 Production Rates. The production rates for the TBM are dependant on the machine penetration rate and utilization. Estimates of the penetration rates were based on the laboratory testing performed to date and the jointing characteristics of the rock mass. The degree of jointing and bedding also has a tremendous influence on the penetration rate. The method of computation of daily production rates for a TBM is presented in Paragraphs 3.8.1.3.3, Section 3, Appendix E.

2.8.4 Cutter Wear Estimates. Conservative estimates of cutter wear have been used and included in the cost estimate.

2.9 Muck

2.9.1 General. Significant technological advances in conveyor design and application have been made in recent years. This area will most likely continue to see enhancements and this office will closely monitor any changes.

2.9.2 Nature of Materials. The muck produced by the TBMs would be comprised of a very fine fraction mixed with flat and elongate fragments. The gradation of the mix would be dependant upon the rock type being bored. The higher the penetration rate the larger the flake dimensions.

2.9.3 Methods of Removal. It is most likely that a horizontal tunnel and vertical shaft conveyor system would be used for muck removal. Use of other haulage methods, such as muck trains, would not be excluded by the specifications. Some recent experience with other large diameter TBM bored tunnels indicates that significant improvement in TBM utilization can be realized when conveyors are used instead of mucking trains.

2.9.4 Surface Transportation. This issue will be resolved when plans and specifications are prepared. Uncertainty in the long term availability of different transportation systems significantly hinders ones ability to accurately predict the type and method of surface transportation. Rail lines currently viewed as a means of transportation may not be available when the tunnel contracts are awarded. However, the current plan anticipates the use of rail lines, trucks and water borne barges to transport the tunnel muck where appropriate.

2.9.5 Potential Usage. The muck produced by a TBM is not readily usable as concrete aggregate due to its very flaky/platy nature. Washing and gradation of the material would have to be performed first. It would however, be usable in its natural state in engineered landfills. The salability of the tunnel muck will be thoroughly evaluated

during the preparation of the Feature Design Memorandum. No credit for muck value has been included in the cost estimates. The suitability of tunnel muck for use in this project's levee construction will be further examined.

The use of tunnel muck, either commercially or as part of the project, is a complex issue which would be subject to many variables. For this reason it is not appropriate to address specifics on this subject until later in the PED studies.

2.10 Rock Support

2.10.1 General. The initial support of the opened bored tunnel included any and all items which would be installed prior to placement of the liner. The temporary support would consist primarily of rock bolts on regular spacings installed in the crown of the tunnel. The spacing of the bolts would be dependent upon the quality of the rock in the crown and would also be supplemented with spot bolting, welded wire mesh, and strapping. In cases where rock bolts would not be sufficient to support the rock, 8 x 48 steel ribs on four foot centers would be used.

2.10.2 Rock Bolts. Rock bolts would be the primary means of initial support in the tunnel. They would be installed immediately behind the head of the Tunnel Boring Machine (TBM) using drill rigs installed specifically for this purpose. Several different type of rock bolts would be available and each would provide specific advantages and disadvantages.

Swellex and split set bolts belong to the broad category known as friction anchored bolts. The disadvantages of these bolts are:

- o Not regarded as long lived as a solid bar reinforcement.
- o Normally require corrosion protection for permanent installations.
- o The bolt length installed is limited.
- o Material cost is relatively high.

For split set bolts the hole diameter is very critical. Their advantages are:

- o More flexible with rock mass and retain strength.
- o Ease of installation.
- o Low material cost.

The use of Swellex bolts or split sets has not been encouraged by the Corps of Engineers.

Resin encapsulated bolts provide these advantages:

- o Quick installation.
- o Adaptability.
- o Resistance to corrosion.

Their disadvantages include:

- o High cost.
- o Occasional problems with anchorage reliability.
- o Resin can be difficult to work with.
- o Resin can be toxic without adequate ventilation.

Cement grouted bolts using mechanical anchors and Hollow Core bolts are another option for support. Their main disadvantages are they more difficult to install and do not develop their maximum support as quickly as the other systems described.

For the purposes of this cost estimate, the resin encapsulated bolts were used. This would make the M-CACES cost estimate conservative, so that a potential savings could be achieved if a less expensive bolt is deemed acceptable during the next phase of design.

2.10.3 Strapping. Strapping would consist of 12 to 124 gage steel plate deformed. This would provide the necessary support between the rock bolts as needed. The key would be to hold intermediate loose blocks of rock in place, so that the self supporting rock arch could form. This supplemental support would normally be fabricated specifically for a job. The strapping must be installed in contact with the rock to be effective.

2.10.4 Welded Wire Mesh. The welded wire mesh would prevent small rock falls from occurring between the bolted and strapped material. Even a small rock constitutes a serious threat to worker safety in a large diameter tunnel. The M-CACES cost estimate was based on welded wire mesh with a 4 inch square opening. Welded wire was preferred over chain link because it would not unravel if a strand was severed. The mesh would be held in place with rock bolts and intermediate short pins as required. The mesh would be installed over the upper 90 degrees of the tunnel on an as needed bases depending on the frequency of jointing and bedding. Mesh on the side walls and invert is not thought to be necessary.

2.10.5 Steel Ribs. Steel ribs would be required primarily in the faulted areas, where the disturbed rock would not allow bolting. The ribs would be installed in segments immediately behind the TBM head. A type of lagging between the ribs would be needed. The M-CACES cost estimate assumed that 8 inch ribs weighing 48 pounds per linear foot would be installed on 4 foot centers through the disturbed rock areas and be encapsulated in the final concrete lining.

2.10.6 Tunnel Lining. Initially three types were investigated which were:

- o Unlined
- o Pre-Cast Segmental
- o Cast-In-Place

Due to environmental and longevity considerations, the unlined option was eliminated early in the study even though it was the least expensive option. Based on its more desirable hydraulic characteristics and the recommendations of the consultant group, a cast-in-place liner was selected as the most appropriate at this stage of design. The use a pre-cast segmental liner would be an alternative that would be left to the contractors, possibly as a bidding option. The M-CACES cost estimate was based on a constant 15 inch liner thickness of varied concrete design strength. Under the proposed construction sequencing, the liner within a given contract would not be placed until the excavation in that reach was completed.

2.11 Grouting

A critical issue for the successful completion of tunneling was the control of water inflow. This was of important from both an operational and environmental standpoint. The groundwater study indicates that some water bearing zones are present which could produce enough flow to stop tunneling operations. In addition, drawdown of water levels within these zones created by unobstructed flow into the tunnel would not be permissible. For these reasons it was determined that grouting ahead of the TBM would be necessary to anticipate and treat these high yield water bearing zones before encountering them with actual excavation.

In order to anticipate areas of heavy inflow the TBM's would be fitted with the capability to drill probe holes in advance of the drive. Indication of high flow from the probe hole would initiate a grouting operation by drilling a series of holes in advance of the TBM and pre-grouting the rock mass before boring through it. This grouting procedure would tend to reduce progress rates which would add very significantly to the cost of tunneling. These additional costs have been included in the M-CACES cost estimate.

"Panning," or placing sheet metal over small seeps, may also be used to reduce localized flows to allow liner placement. After concrete liner placement is complete, consolidation grouting of the rock behind the liner will be performed in the more serious zones. Finally, contact grouting through the liner would be performed to ensure good contact between the liner and the surrounding rock.

2.12 Ventilation

Ventilation of all underground construction projects are strictly controlled by regulation. This project and the M-CACES cost estimate would require that all pertinent regulations be met. Since driving the tunnel with TBM's produces dust, dust suppression systems have been included in the M-CACES estimate. These systems commonly use water but will be left to the contractor's discretion so long as the system meets the minimum health and safety requirements.

2.13 Land Requirements and Acquisition Costs

In order to construct the proposed plan-of-improvement, local interests would be required to provide certain lands and easements. Studies were conducted by the Real Estate Division to determine the estimated value of lands and easements needed for the channel improvement, acquisition, local protection works and tunnel construction. The real estate study for the proposed plan-of-protection showing its method of financial compensation is presented in Volume V, Appendix H - Real Estate.

Fee takings, natural storage acquisition, permanent (including that portion of the permanent easements which lie between the existing stream banks) and temporary easements for the tunnel, levee/floodwall systems and ponding areas have been included in this report. These estimates include costs items such as contingencies, planning, surveys, appraisals/administration.

2.14 Lump Sum Items

Certain items of cost such as mobilization and demobilization, dewatering and diversion of streams, maintenance and protection of traffic have been listed in the detailed estimates as lump sum items. These items were costed in this way due to the large number of tasks and multiplicity of activities utilized to accomplish each of these work features.

2.15 Contingencies

As stated in ER 1110-2-1302 (31 Mar 94), the goal in contingency development is to identify the uncertainty associated with an item of work or task, forecast the risk/cost relationship, and assign a value to this task that would limit the cost risk to an acceptable degree of confidence. Consideration must be given to the details available at each stage of planning, design, or construction for which a cost estimate is being prepared. During development of the estimate, sufficient contingencies should be added at the lowest M-CACES title or detail level where the risks or uncertainties have been identified.

Contingencies may vary throughout the cost estimate and could be a significant portion of the overall costs when the lack of investigation data or design detail is available. Final contingency development and assignment that describes the potential for cost growth must be included in the cost estimate as a part of the project narrative. When contingency factors shown, are applied to any portion of the cost estimate up to the feature level, the statement "Normal design variances are expected -normal contingency values used" is acceptable in addressing that specific portion.

The following contingency factors (%) represent a reasonable guide for the construction features of the cost estimate:

Phase of Project	Total Project Cost Construction Cost	
	>\$10,000,000	<\$10,000,000
Development		
Reconnaissance/Feasibility	20%	25%
Project/Feature Design		
Memorandums	15%	20%
Plans and Specifications	10%	10%

Therefore, based on the above, a 15 percent contingency factor was used for the levee/floodwall and channel modification portions of the project. Accordingly, in light of the variety of complex unknowns inherent in tunnel construction, together with the limited boring program and subsurface analysis in the area south of Workshaft #2, an average factor of 28 percent was used for the tunnel proper and a 20 percent factor was used for the related workshafts, inlets and outlets.

2.16 Planning, Engineering and Design

Costs were developed for all activities associated with the planning, engineering and design effort. These costs included the preparation of each construction contract and support during construction through project completion. It also included all in-house labor based upon work-hour requirements, material and facility costs, architect-engineer (A/E) contracts with a breakdown of services, additional studies, travel, overhead, and contingencies. Costs were developed in detail for each product in accordance with the Civil Works Breakdown Structure (CWBS).

All of the costs for these activities were developed by Hill International, Inc. in conjunction with the project Management Branch of the Passaic River Division (PRD) and then forwarded to the Civil Design Team for incorporation into the M-CACES cost estimate.

2.17 Construction Management

Costs were developed for all construction management activities from pre-award requirements through final contract closeout. These costs included the in-house labor based upon work-hour requirements, materials, facilities costs, support contracts, travel, overhead, and contingencies. Costs were developed in detail in accordance with the CWBS and include but were not limited to such anticipated items as the salaries of the resident engineer and staff, surveyors, inspectors, draftsmen, clerical, and custodial personnel; construction cost or rental for field office, operation, maintenance and fixed charges for transportation and for other field equipment; field supplies; construction management, general construction supervision; project office administration, distributive cost of area office and general overhead charged to the project. The work items and activities for the tunnel work would include, but not be limited to: the salaries of all supervisory, engineering (including resident geologist and geological staff), office and safety field personnel; all on site expenses including supplies, rent, telephone and automobiles. Also any additional field costs such as surveys, borings or soil sampling and well monitoring were included.

All of the costs for these activities were developed by Hill International, Inc. in conjunction with the project Management Branch of the PRD and then forwarded to the Civil Design Team for incorporation into the M-CACES cost estimate.

2.18 Interest During Construction

Interest During Construction (IDC) is the cost of construction money invested before the beginning of the period of economic analysis and before the accumulation of benefits by the project. IDC costs have been added to the project cost to determine investment costs. Average annual costs were determined based on investment costs which include IDC.

Planning Guidance Notebook (EP 1105-2-45, Paragraph 2-6, page 2-2) states that costs incurred during the construction period should be increased by adding compound interest at the applicable project discount rate from the date the expenditures are made to the beginning of the period of analysis (Base Year). For purposes of this study, construction expenditures were assumed to occur in equal monthly increments and interest was determined assuming that expenditures are made at mid-month.

Construction of the proposed plan of improvement has been estimated to be 10 years and 10 months as shown on Figure DF-2. This would include land acquisition, relocations and alterations, channel excavation, tunnel,

levee/floodwall construction, and implementation of environmental and aesthetic measures; with economic benefits expected to begin to accrue for each increment upon completion of construction of the corresponding increment. The pre-base year benefits were estimated using the Federal interest rate of 7 3/4 percent.

o

SECTION 3 - ANNUAL CHARGES

3.1 Project Life

It was estimated that the major features of the plan of improvement such as levees, floodwalls, tunnels, and pumping station structures would have a useful life expectancy of 100 years.

3.2 Interest and Amortization

The interest rate used in converting investment costs to an equivalent annual cost is the rate set by the Water Resources Council for the evaluation of Federal Government water resources projects. This rate has been set at 7-3/4 percent for FY96.

Amortization is the financial or economic process of recovering an investment in a project. The amortization period is the period of time assumed or selected for economic recovery of the net investment in a project. The definition of amortization can more readily be explained by stating that it is the equivalent annual amount which, with compound interest, will accumulate to provide one dollar at the end of the amortization period.

When combined, interest and amortization become the capital recovery factor which, when applied to project costs, would result in the annual cost of the project investment.

The interest and amortization factor based on a 100-year project life and 7-3/4 percent interest rate, is 0.0775444.

3.3 Major Replacement

The annual cost of equipment which would be anticipated to be replaced before the end of the project life has been estimated. Major replacement cost has been calculated to determine the present worth of that value. The cost was then converted to an annual charge over the entire project life of the element. The useful life of the mechanical equipment (pumps, etc.) was estimated to be 30 years. Therefore, this equipment was expected to be replaced three times throughout a project life of 100 years.

3.4 Operation and Maintenance

The Operation and Maintenance (O&M) costs were estimated to represent the anticipated annual costs necessary to maintain the project at full operating efficiency throughout the project life. Following completion of the project, operation and maintenance of project facilities would be performed by the local cooperating agency in accordance with federal regulations and operations manual.

The O&M costs associated with the various project elements were based on experience by the New York State Department of Environment Conservation, Office of Regional Operations, Water Management Group and the Bureau of Fisheries. These nearby agencies provide information on actual maintenance and repair costs for various types of local flood damage reduction projects in the New York State.

Project facilities in the recommended plan that would require periodic operation to assure readiness would be the pump stations and gates at the inlets, outlet and weir structures. Periodic maintenance would also be required at these features.

The major task associated with this project would be the annual maintenance associated with the channels, levees and floodwalls. These tasks would include but not be limited to: inspection, maintenance, repair and replacement of riprap; clearing of debris from the channel and bridges; sediment removal as needed, shoal removal, brush and tree control, trash pickup; cutting of grass along the channel banks and levees; the repair of concrete structures; and the painting of miscellaneous metal parts.

The fish and wildlife mitigation features have been designed to be self maintaining, as recommended by the U.S. Fish and Wildlife Service and the New Jersey Bureau of Freshwater Fisheries. Therefore, there is no O&M cost associated with the mitigation features. The wetlands would also be self-perpetuating once established, and the nesting boxes designed to replace the loss of reproductive cover from trees are expected to degenerate over time. They are not scheduled to be maintained or replaced since new trees and nesting niches would become available as the riparian corridor becomes reestablished.

Some of the major federal activities associated with the operation and maintenance of the tunnel are:

1. Periodic Pump-Out.

The tunnel would be pumped out for both a visual inspection and allow necessary sediment clean out. The schedule for this pump out would be after five years of operation and at least once every ten years thereafter or after a major flood event.

2. On-Site Personnel.

Qualified personnel would be provided on-site to receive flood warning messages and operate the various gates during flood events. Other personnel would perform routine daily tasks such as general inspection

and to guard against vandalism to the inlets, outlet, and weir structures. Personnel would also ensure the proper working order of the related electrical components and hydraulic machinery through periodic testing of the equipment. An annual testing program of the entire system would be initiated along with a training program for personnel in preparation for a flood emergency.

3. Mechanical Maintenance.

Coupled with the need for on-site personnel, a yearly maintenance schedule would be initiated for the gates at the Pequannock Weir, Great Piece Weir, Pompton (Main) Inlet, the Passaic (Spur) Inlet, and the Newark Bay Outlet. Annual maintenance would generally include the replacement of seals, lubricating equipment and the painting of miscellaneous metal parts.

4. Inlet and Outlet Structures.

An annual scheduled maintenance program would be initiated for the inlet structures at the Pompton (Main) Inlet, Passaic (Spur) Inlet and the Newark Bay Outlet. At the Pompton Inlet, maintenance would include trash pick-up and grass cutting, clearing the inlet from debris, inspection of and any repair of the concrete due to weather exposure. At Passaic (Spur) Inlet, the work would include trash pick-up and grass cutting, debris removal at the gated diversion spillway and necessary concrete repairs. At the Newark Bay Outlet scheduled maintenance would include any debris removal at the gates.

5. Tunnel Sediment Removal.

Scheduled sediment removal of the tunnel would occur at least ten times during the 100 year life of the structure. Other periodic clean-outs may possibly occur, especially after major flood events. The clean out would involve the removal of any silt or alluvial deposits trapped within the tunnel. To perform this maintenance, crews and equipment would be lowered by crane into the tunnel from any suitable workshaft. Also during the sediment removal phase, a visual inspection of the tunnel could be made to check the lining for excessive wear, cracks or seepage.

3.5 Estimated Annual Charges

A detailed breakdown of annual costs, including Federal and non-Federal charges is presented in Table DT-2.

Section 4 - COST SHARING RESPONSIBILITIES

4.1 General

The basic requirements for the Federal and non-Federal sharing of responsibilities in the construction, operation and maintenance of Federal water resources projects are set forth in the Water Resources Development Act (WRDA) of 1986 (PL 99-662). These basic responsibilities have been modified by WRDA 1990 and 1992 for this project and actual cost sharing options are discussed in further detail in the Main Report.

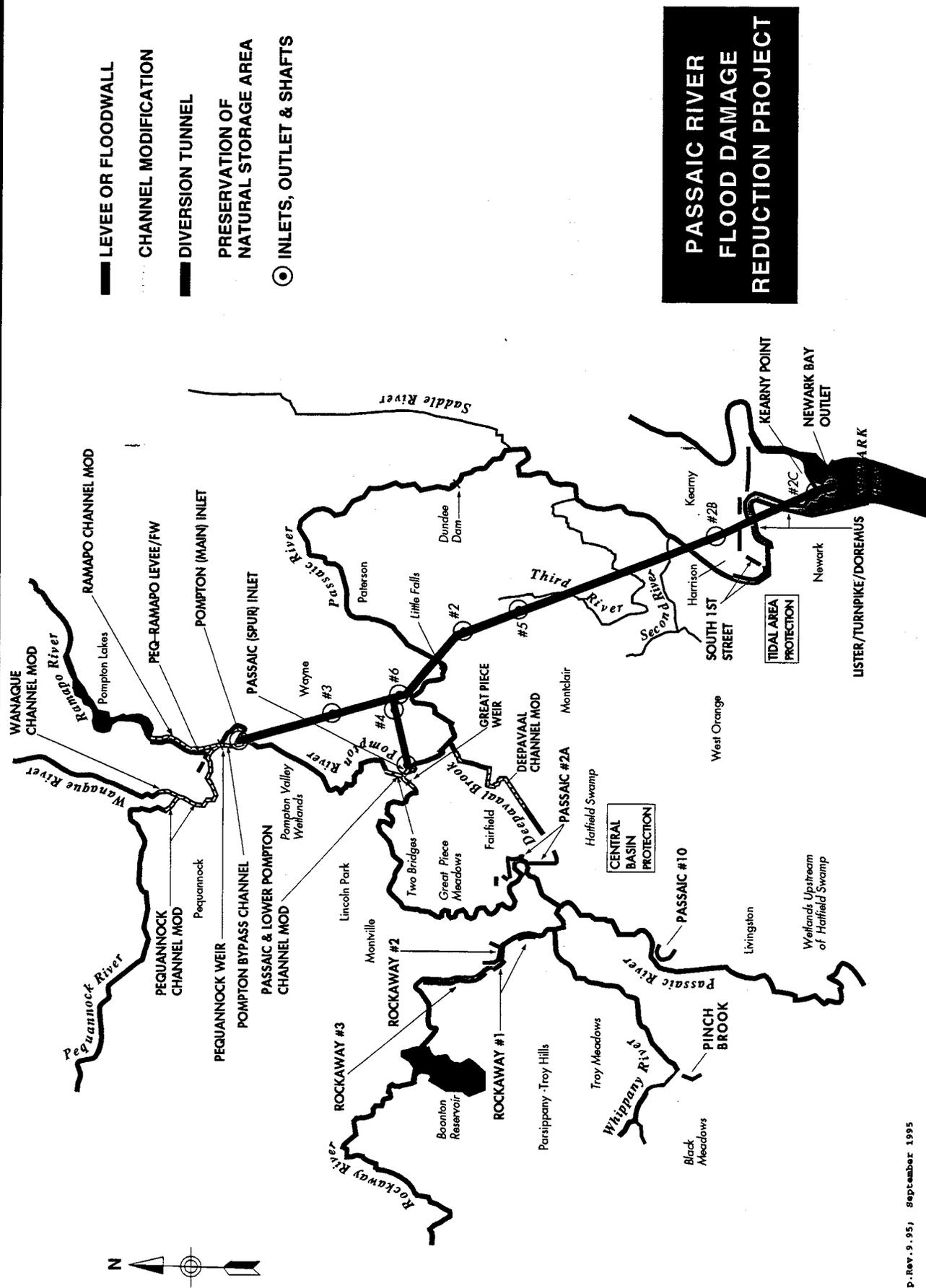
4.2 Cost Allocation

The Federal share of the project's total first cost is \$1,040,000,000. This represents 74.3% of the total for the project's first cost. The Federal Government will design the project, prepare detailed plans/specifications and construct the project, exclusive of those items specifically required of non-Federal interests.

The non-Federal share of the estimated total first cost of the proposed project is \$360,000,000, which consists of lands, easements, rights-of-way, relocations and disposals totaling \$41,000,000, and a cash contribution of \$319,000,000. This represents 25.7% of the total first costs.

The Water Resources Development Act of 1986, Section 103, which sets forth cost sharing for flood control projects, states that non-Federal interests must operate, maintain and rehabilitate the project, and must pay during construction a minimum of 25% of the total cost assigned to flood damage reduction, including 5% of the costs in cash, and provide lands, easements, rights-of-way, relocations and disposal areas (LERRD). If the 5% cash plus LERRD exceed 30% of the total cost assigned to flood damage reduction, non-Federal interests may reimburse the excess over 15 years. The non-Federal share is limited to 50%. For nonstructural components, such as the acquisition of natural flood storage areas, the non-Federal share is limited to 25% of the cost. For hurricane and storm damage reduction measures, such as the Lower Valley tidal levee/floodwall systems, the non-Federal share is 35%. Section 906 of PL-99-662 states that fish and wildlife mitigation costs are to be allocated among the purposes which caused the requirement for mitigation and to be cost-shared to the same extent as project costs allocated to these purposes.

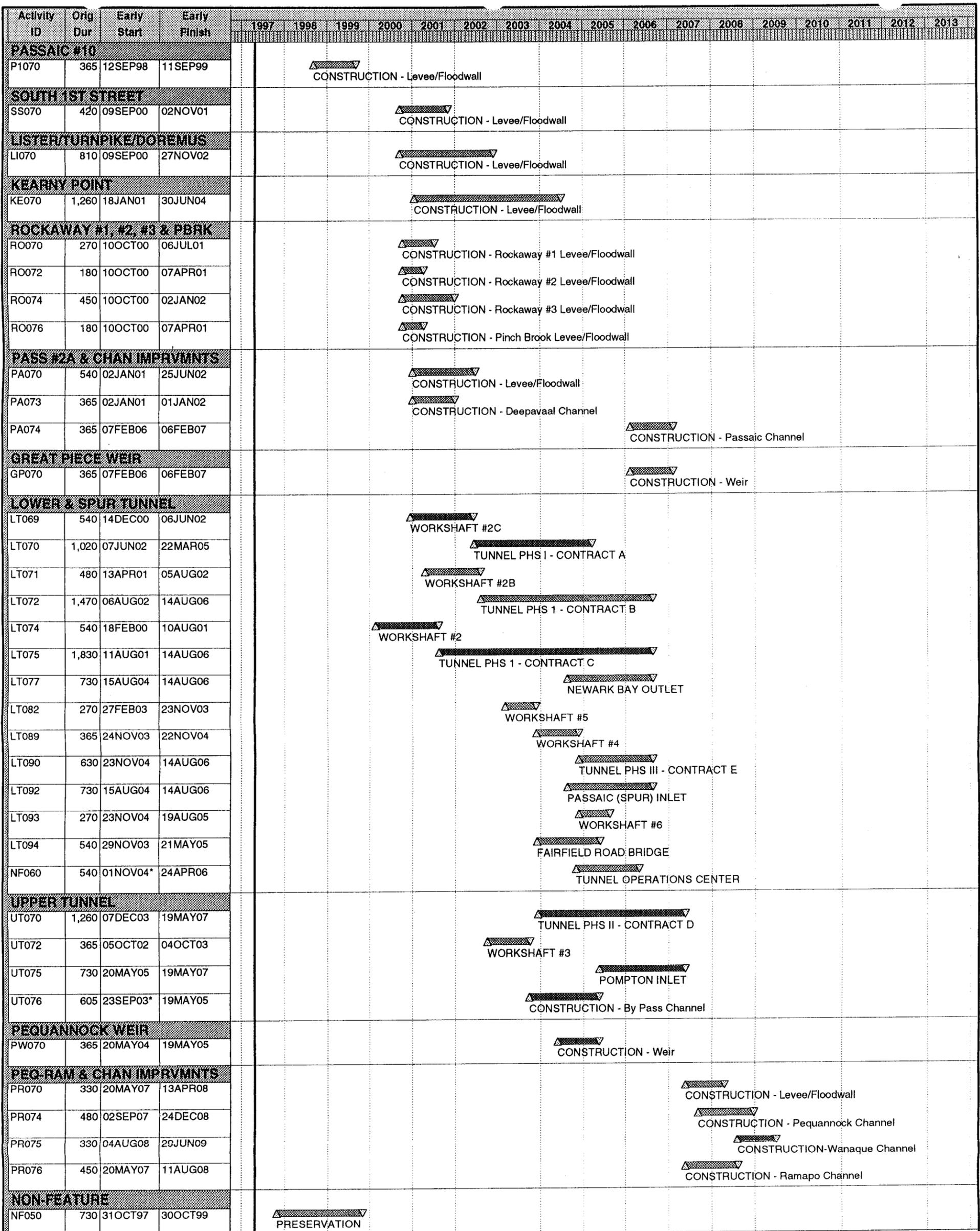
A breakdown of these costs are shown in Table DT-3. For a complete listing and further explanation of the flood damage reduction, and hurricane and storm damage reduction levee/floodwall systems see the Main Report.



- LEVEE OR FLOODWALL
- - - CHANNEL MODIFICATION
- ▬ DIVERSION TUNNEL
- PRESERVATION OF NATURAL STORAGE AREA
- ⊙ INLETS, OUTLET & SHAFTS

**PASSAIC RIVER
FLOOD DAMAGE
REDUCTION PROJECT**

FIGURE
DF-1



1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Project Start 30SEP95
 Project Finish 29JUN09
 Data Date 01MAY97
 Plot Date 01AUG95

Early Bar
 Progress Bar
 Critical Activity

PMPs

Sheet 1 of 1

PASSAIC RIVER FLOOD DAMAGE REDUCTION
US ARMY CORPS OF ENGINEERS
SUMMARY LEVEL-CONSTRUCTION SCHEDULE

PMP SUPPLEMENT			
Date	Revision	Checked	Approved

FIGURE DF- 2

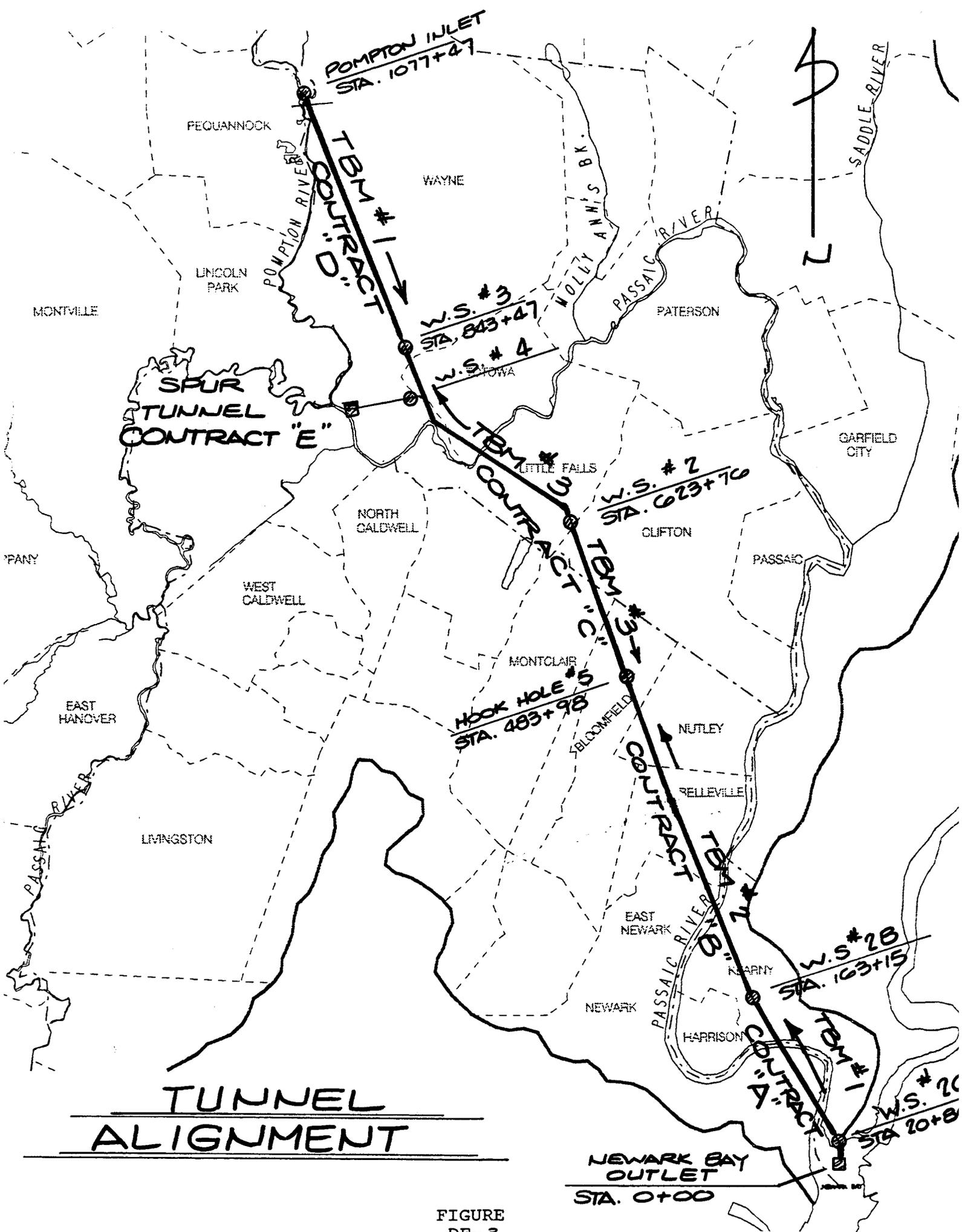


FIGURE
DF-3

Table DT-1
PASSAIC RIVER FLOOD DAMAGE REDUCTION PROJECT
SUMMARY OF PROJECT FIRST COSTS

PLAN FEATURE	01. Lands and Damages	02. Relocations	06. Fish and Wildlife Facilities	08. Roads, Railroads & Bridges	09. Channels and Canals	11. Levees and Floodwalls	13. Pumping Plant	14. Recreation Facilities	15. Floodway Control-Div Structures	22. Non-Struct Flood Control	30. Planning, Engineering & Design	31. Construction Management	TOTAL PROJECT COST
Ph I Tun-Contr A	1,123,051								138,198,937		12,225,650	7,038,132	158,585,770
Ph I Tun-Contr B	1,893,149								238,660,549		21,092,045	11,967,063	273,614,806
Ph I Tun-Contr C	2,175,912								264,364,212		23,459,006	13,943,912	303,943,042
Workshaft #2	117,513								13,203,898		1,170,552	688,438	15,180,401
Workshaft #2B	4,861								17,942,810		1,535,066	887,438	19,770,175
Workshaft #2C	5,687								47,774,562		4,233,128	2,488,250	54,500,627
Workshaft #3	48,067								5,198,465		749,842	267,625	6,263,999
Workshaft #4	4,739								2,468,523		218,664	127,188	2,819,114
Pompton Inlet	16,507								42,407,848		6,121,502	2,208,413	50,754,070
Two Bridges Inlet	1,136,214								18,614,609		1,656,354	1,010,800	22,417,977
Fairfield Rd Bridge	33,695			4,532,868							404,322	241,888	5,232,773
Newark Bay Outlet	5,828								28,723,923		2,548,645	1,572,639	32,791,235
Ph III Tun-Contr E	491,335		6,028,200						51,068,011		4,565,448	2,915,205	59,039,999
Fish & Wildlife Mitigation										5,572,923	1,168,178	509,738	7,706,116
Pres Natural Storage											182,311		5,755,234
Kearny Point Levee	5,295,503	307,947				32,529,233	459,476				5,390,839	2,489,848	46,472,848
List/Tun/Dore - Sec A	3,210,502	218,349				13,151,910	977,509	21,989			3,085,918	988,278	21,654,455
Doremus - Sec B	1,908,746	287,494				9,763,350					2,315,669	738,520	15,013,779
South 1st St. Levee	3,391,577	192,728				5,513,851	1,210,779	4,140			2,123,923	502,379	12,739,377
Pinch Brook Levee	193,134					1,124,650	129,251				308,672	94,448	1,850,155
Passaic R Channel	33,332					3,680,432					1,028,790	265,687	5,008,261
Great Piece Weir	222,974								8,328,615		1,584,550	605,652	10,741,791
Passaic R #2A Levee	773,159	17,804				5,263,176	455,108	168,289			1,648,145	446,229	8,771,910
Deepaval Channel	493,134	885,247				979,925					660,002	178,095	3,196,403
Rockaway #1 Levee	144,885					2,664,439	118,271	26,843			691,537	210,807	3,886,782
Rockaway #2 Levee	1,183,498					1,707,461	150,679	21,745			462,712	141,066	3,667,121
Rockaway #3 Levee	651,503					11,206,910		53,372			1,249,590	384,719	13,546,094
Passaic R #10 Levee	31,037					1,635,867	223,616				771,121	135,867	2,797,508
Ph II Tun-Contr D	1,333,623								152,080,032		22,031,807	8,460,821	183,906,283
Tunnel Oper Facilities									6,760,398		599,327	351,938	7,711,663
Ramapo R Channel	333,808					5,298,173		7,878			596,474	381,460	6,609,915
Pequan R Channel	504,231					7,583,128		30,243			852,348	545,052	9,472,637
Pequan/Ram Levee	385,343					2,670,015	105,030				316,625	209,988	3,717,244
Wanaque R Channel	208,885					3,195,753		22,253			360,056	231,221	4,018,168
Pequanock Weir	9,591								10,199,573		1,668,262	764,968	12,642,394
Workshaft #5	45,680								1,492,953		132,337	78,188	1,749,158
Workshaft #6	4,147								1,692,144		149,944	87,250	1,933,485
Req By- Pass Channel	23,688								5,309,562		597,778	382,481	6,313,509
Subtotal	27,440,520	1,909,569	6,028,200	4,552,868	20,717,411	87,030,862	3,829,719	356,752	1,053,889,624	5,572,923	129,959,139	64,481,691	1,405,769,278
	27,000,000	1,900,000	6,000,000	4,500,000	20,500,000	86,500,000	3,700,000	400,000	1,050,000,000	5,500,000	130,000,000	64,000,000	1,400,000,000

Table DT-2
PASSAIC RIVER FLOOD REDUCTION PROJECT
ESTIMATED ANNUAL CHARGES OF THE RECOMMENDED PLAN
(October 1994 Price Level; 100 Year Project Life; 7-3/4% Interest Rate)

	FEDERAL	NON-FEDERAL	TOTAL
FIRST COSTS:			
Flood Control	972,000,000	324,000,000	1,296,000,000
(Percent Apportionment)	75%	25%	
Hurricane & Storm Damage Reduction	62,270,000	33,530,000	95,800,000
(Percent Apportionment)	65%	35%	
Recreation	250,000	250,000	500,000
(Percent Apportionment)	50%	50%	
Fish and Wildlife mitigation *	5,775,000	1,925,000	7,700,000
*TOTAL	1,040,295,000	359,705,000	1,400,000,000

INVESTMENT COSTS:			
First Cost	1,040,295,000	359,705,000	1,400,000,000
Interest During Construction	177,905,000	61,515,000	239,420,000
TOTAL	1,218,200,000	421,220,000	1,639,420,000

ANNUAL COSTS:			
Interest During Construction	13,800,000	4,770,000	18,570,000
Interest and Amortization	80,670,000	27,890,000	108,560,000
Operation and Maintenance	-	3,150,000	3,150,000
Minus GDM Cost	-	-	2,985,000
TOTAL	94,470,000	35,810,000	127,295,000

*NOTE: Apportionment of Costs is based on overall average apportionment for the major project purposes

Table DT-3
PASSAIC RIVER FLOOD REDUCTION PROJECT
PROJECT COST SHARING *

TOTAL PROJECT FIRST COSTS	
Construction:	
Flood Control	1,270,100,000
Preservation of Natural Storage	5,800,000
Fish and Wildlife Mitigation	7,700,000
Recreation	500,000
SubTotal Construction	1,284,100,000
Hurricane & Storm Damage Reduction	80,700,000
Total Construction	1,364,800,000
LERRD:	
Flood Control	20,100,000
Hurricane & Storm Damage Reduction	15,100,000
Total Construction	35,200,000
TOTAL PROJECT	1,400,000,000

NON-FEDERAL CONTRIBUTION FIRST COSTS (DURING CONSTRUCTION)	
5% Cash:	
Flood Control (w/o Preservation)	65,200,000
LERRD:	
Flood Control	20,100,000
Hurricane & Storm Damage Reduction	15,100,000
Preservation of Natural Storage	5,800,000
Additional Cash:	
Flood Control	235,200,000
Hurricane & Storm Damage Reduction	18,400,000
Recreation	200,000
Adjusted Non-Federal Share:	
Cash	319,000,000
LERRD	41,000,000
TOTAL	360,000,000 *

NON-FEDERAL CONTRIBUTION - OMRR	3,150,000 *
--	--------------------

*Basic cost-sharing from WRDA 1986. Does not include modifications to cost-sharing by WRDA 1990 and 1992.

Table DT -4
PASSAIC RIVER FLOOD DAMAGE REDUCTION PROJECT
COMPARISON WITH APPROVED PB-3 ESTIMATE
(FIRST COST)

ACCT NO. ITEM	APPROVED PB-3	CURRENT DESIGNED	DIFFERENCE	REMARKS
01 LANDS & DAMAGES	48,900.0	27,400.0	-21,500.0	Reduced Real Estate requirements
02 RELOCATIONS	3,300.0	2,000.0	-1,300.0	Design changes reduced scope
06 FISH & WILDLIFE FACILITIES	1,900.0	6,000.0	+4,100.0	Design changes increased scope
08 ROADS, RAILROADS & BRIDGES	2,600.0	4,600.0	+2,000.0	Design changes increased scope
09 CHANNELS AND CANALS	--	20,700.0	+20,700.0	Formerly part of Account 15.
11 LEVEES & FLOOD WALLS	116,200.0	85,000.0	-31,200.0	Design changes reduced scope
13 PUMPING PLANTS	25,200.0	3,800.0	-21,400.9	Design changes reduced scope
14 RECREATIONAL FACILITIES	600.0	400.0	-200.0	Design changes reduced scope
15 FLOODWAY CONTROL & DIVERSION STRUCTUR	1,015,000.0	1,050,000.0	+35,000.0	Design changes increased scope
22 NOSTRUCTURAL FLOOD CONTROL	28,000.0	5,600.0	-22,400.0	Land use changes
30 PLANNING, ENGINEERING & DESIGN	133,200.0	130,000.0	-3,200.0	Design changes reduced scope
31 CONSTRUCTION MANAGEMENT	65,100.0	64,500.0	-600.0	Design changes reduced scope
TOTAL COST (FED & NON - FED FUNDS)	1,440,000.0	1,400,000.0	-40,000.0	

Table DT --5
PASSAIC RIVER FLOOD DAMAGE REDUCTION PROJECT
COMPARISON WITH APPROVED PB -3 ESTIMATE
(FULLY FUNDED COST)

ITEM	APPROVED PB -3	CURRENT DESIGNED	DIFFERENCE	REMARKS
01 LANDS & DAMAGES	66,300.0	35,400.0	-30,900.0	Reduced Real Estate requirements
02 RELOCATIONS	4,700.0	2,400.0	-2,300.	Design changes reduced scope
06 FISH & WILDLIFE FACILITIES	2,500.0	8,200.0	+5,700.	Design changes increased scope
08 ROADS, RAILROADS & BRIDGES	3,600.0	6,200.0	+2,600.0	Design changes increased scope
09 CHANNELS AND CANALS	-	30,700.0	+30,700.0	Formerly part of Account 15.
11 LEVEES & FLOODWALLS	152,600.0	109,200.0	-43,400.0	Design changes reduced scope
13 PUMPING PLANTS	31,200.0	4,700.0	-26,500.0	Design changes reduced scope
14 RECREATIONAL FACILITIES	900.0	500.0	-400.0	Design changes reduced scope
15 FLOODWAY CONTROL & DIVERSION STRUCTUR	1,320,000.0	1,410,000.0	+90,000.0	Design changes increased scope
22 NOSTRUCTURAL FLOOD CONTROL	32,600.0	6,500.0	-26,100.0	Land use changes
30 PLANNING, ENGINEERING & DESIGN	166,000.0	165,000.0	-1,000.0	Construction schedule changes
31 CONSTRUCTION MANAGEMENT	89,600.0	91,200.0	+1,600.0	Construction schedule changes
TOTAL COST (FED & NON - FED FUNDS)	1,870,000.0	1,870,000.0	0.0	

ATTACHMENT M-CACES

DA - 1

PHASE I TUNNEL - Contract A

Tue 25 Jul 1995

U.S. Army Corps of Engineers
PROJECT PHICA2: Phase I Tunnel - Contract A - Outlet to Workshaft #2B
FINAL ESTIMATE

TIME 12:04:33

TITLE PAGE 1

Phase I Tunnel - Contract A
Outlet to Workshaft #2B
Sta 0 + 00 to Sta 163 + 15
Passaic River
Flood Control Project

Designed By: Engineering Div, Nashville Dist
Estimated By: H.F. (Bud) Kiefer, CENAN-PR-T

Prepared By: Civil Design Team, Tech Eng Br.
Passaic River Division

Date: 02/17/95
Est Construction Time: 714 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J



SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	4
PROJECT DIRECT SUMMARY - LEVEL 3.....	7

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents			976,566	146,485	1,123,051		
	General Design Memorandum			976,566	146,485	1,123,051		
	LANDS AND DAMAGES			976,566	146,485	1,123,051		

15 FLOODWAY CONTROL & DIV STRUCT								
15.01 Mob/Demob & Site Prep Work								
15.01.01	Mobilization and Demobilization			1,148,935	230,000	1,378,935		
15.01.02	Site Preparation			431,655	95,000	526,655		
	Mob/Demob & Site Prep Work			1,580,590	325,000	1,905,590		

15.02 Excavation								
15.02.01	Shaft Support			10,185,468	2,775,000	12,960,468		
15.02.02	Weekend Maintenance & Watch	116.00	DAY	2,404,504	425,000	2,829,504	24392.28	
15.02.03	Setup & Breakdown TBM			871,411	233,000	1,104,411		
15.02.04	Drill & Blast Start Ch/Tail Tun	135919	CY	11,608,906	2,182,500	13,791,406	101.47	
15.02.06	Mole Tunnel - Sandstone & Shale	796921	CY	46,285,882	9,827,000	56,112,882	70.41	
	Excavation			71,356,171	15,442,500	86,798,671		

15.03 Rockbolts								
15.03.01	Rockbolts	35041.00	EA	6,877,217	1,745,000	8,622,217	246.06	
	Rockbolts	35041.00	EA	6,877,217	1,745,000	8,622,217	246.06	

15.04 Grout Inflows								
15.04.01	Grout Inflows	103.00	DAY	4,412,007	1,195,000	5,607,007	54436.96	
	Grout Inflows	103.00	DAY	4,412,007	1,195,000	5,607,007	54436.96	

15.07 Welded Wire Fabric, w/strapping								
15.07.01	Welded Wire Fabric, w/strapping	94046.00	SF	787,698	170,000	957,698	10.18	

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES
Welded Wire Fabric, w/strapping		94046.00	SF	787,698	170,000	957,698	10.18	
15.08 Concrete								
15.08.01	Shaft Support			3,741,715	1,127,700	4,869,415		
15.08.02	Weekend Maintenance & Watch	26.00	DAY	1,012,470	258,000	1,270,470	48864.23	
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	481,318	128,000	609,318	10155.29	
15.08.04	Invert Clean Up	62.00	DAY	2,098,230	485,000	2,583,230	41665.00	
15.08.05	Form & Place Concrete	107117	CY	15,871,221	3,887,000	19,758,221	184.45	
	Concrete	107117	CY	23,204,954	5,885,700	29,090,654	271.58	
15.09 Contact Grout								
15.09.01	Contact Grout	33.00	DAY	1,234,853	346,100	1,580,953	47907.65	
	Contact Grout	33.00	DAY	1,234,853	346,100	1,580,953	47907.65	
15.10 Final Clean Up								
15.10.01	Final Clean Up	16.00	DAY	514,027	107,000	621,027	38814.20	
	Final Clean Up	16.00	DAY	514,027	107,000	621,027	38814.20	
15.11 Instrumentation								
15.11.01	Instrumentation			275,781	45,000	320,781		
	Instrumentation			275,781	45,000	320,781		
15.12 Maint & Protection of Traffic								
15.12.01	Maint & Protection of Traffic			2,319,339	375,000	2,694,339		
	Maint & Protection of Traffic			2,319,339	375,000	2,694,339		
	FLOODWAY CONTROL & DIV STRUCT			112,562,637	25,636,300	138,198,937		
30 PLANNING, ENGINEERING AND DESIGN								
30.01 Planning, Engineering and Design								
30.01.01	Planning, Engineering and Design			10,685,650	1,540,000	12,225,650		

PROJECT PHICA2: Phase I Tunnel - Contract A - Outlet to Workshaft #2B

FINAL ESTIMATE

SUMMARY PAGE 3

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES
Planning, Engineering and Design				10,685,650	1,540,000	12,225,650		
PLANNING, ENGINEERING AND DESIGN				10,685,650	1,540,000	12,225,650		
31 CONSTRUCTION MANAGEMENT								
31.01 Construction Management (S&I)								
31.01.01	Construction Management (S&I)			5,628,132	1,410,000	7,038,132		
	Construction Management (S&I)			5,628,132	1,410,000	7,038,132		
	CONSTRUCTION MANAGEMENT			5,628,132	1,410,000	7,038,132		
	Phase I Tunnel - Contract A			129,852,985	28,732,785	158,585,770		

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT

01 LANDS AND DAMAGES										
01.20 General Design Memorandum										
01.20.03	Real Estate Analysis Docu			976,566	0	0	0	0	976,566	

	General Design Memorandum			976,566	0	0	0	0	976,566	

	LANDS AND DAMAGES			976,566	0	0	0	0	976,566	

15 FLOODWAY CONTROL & DIV STRUCT										
15.01 Mob/Demob & Site Prep Work										
15.01.01	Mobilization and Demobili			781,145	199,320	132,692	6,933	28,845	1,148,935	
15.01.02	Site Preparation			293,476	74,884	49,852	2,605	10,837	431,655	

	Mob/Demob & Site Prep Wor			1,074,621	274,204	182,544	9,537	39,682	1,580,590	

15.02 Excavation										
15.02.01	Shaft Support			6,924,962	1,766,999	1,176,332	61,458	255,717	10,185,468	
15.02.02	Weekend Maintenance & Wat	116.00	DAY	1,634,790	417,139	277,699	14,509	60,368	2,404,504	20728.49
15.02.03	Setup & Breakdown TEM			592,461	151,174	100,640	5,258	21,878	871,411	
15.02.04	Drill & Blast Start Ch/Ta	135919	CY	7,892,738	2,013,940	1,340,727	70,047	291,453	11,608,906	85.41
15.02.06	Mole Tunnel - Sandstone &	796921	CY	31,469,146	8,029,782	5,345,614	279,285	1,162,054	46,285,882	58.08

	Excavation			48,514,098	12,379,034	8,241,014	430,557	1,791,470	71,356,171	

15.03 Rockbolts										
15.03.01	Rockbolts	35041.00	EA	4,675,727	1,193,076	794,258	41,497	172,660	6,877,217	196.26

	Rockbolts	35041.00	EA	4,675,727	1,193,076	794,258	41,497	172,660	6,877,217	196.26

15.04 Grout Inflows										
15.04.01	Grout Inflows	103.00	DAY	2,999,664	765,405	509,548	26,622	110,768	4,412,007	42835.02

	Grout Inflows	103.00	DAY	2,999,664	765,405	509,548	26,622	110,768	4,412,007	42835.02

15.07 Welded Wire Fabric, w/strapp										
15.07.01	Welded Wire Fabric, w/str	94046.00	SF	535,545	136,652	90,972	4,753	19,776	787,698	8.38

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT
Welded Wire Fabric, w/str		94046.00	SF	535,545	136,652	90,972	4,753	19,776	787,698	8.38
15.08 Concrete										
15.08.01	Shaft Support			2,543,941	649,121	432,135	22,577	93,940	3,741,715	
15.08.02	Weekend Maintenance & Wat	26.00	DAY	688,365	175,646	116,931	6,109	25,419	1,012,470	38941.16
15.08.03	Set Up & Breakdown Concre	60.00	SHF	327,241	83,500	55,588	2,904	12,084	481,318	8021.96
15.08.04	Invert Clean Up	62.00	DAY	1,426,558	364,006	242,327	12,661	52,678	2,098,230	33842.42
15.08.05	Form & Place Concrete	107117	CY	10,790,629	2,753,376	1,832,987	95,766	398,463	15,871,221	148.17
	Concrete	107117	CY	15,776,735	4,025,649	2,679,969	140,017	582,584	23,204,954	216.63
15.09 Contact Grout										
15.09.01	Contact Grout	33.00	DAY	839,560	214,225	142,615	7,451	31,002	1,234,853	37419.77
	Contact Grout	33.00	DAY	839,560	214,225	142,615	7,451	31,002	1,234,853	37419.77
15.10 Final Clean Up										
15.10.01	Final Clean Up	16.00	DAY	349,480	89,175	59,366	3,102	12,905	514,027	32126.70
	Final Clean Up	16.00	DAY	349,480	89,175	59,366	3,102	12,905	514,027	32126.70
15.11 Instrumentation										
15.11.01	Instrumentation			187,500	47,843	31,850	1,664	6,924	275,781	
	Instrumentation			187,500	47,843	31,850	1,664	6,924	275,781	
15.12 Maint & Protection of Traffic										
15.12.01	Maint & Protection of Tra			1,576,888	402,364	267,863	13,995	58,229	2,319,339	
	Maint & Protection of Tra			1,576,888	402,364	267,863	13,995	58,229	2,319,339	
	FLOODWAY CONTROL & DIV ST			76,529,817	19,527,627	13000000	679,193	2,826,000	112,562,637	
30 PLANNING, ENGINEERING AND DESIGN										
30.01 Planning, Engineering and Design										
30.01.01	Planning, Engineering and			10,685,650	0	0	0	0	10,685,650	

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT
Planning, Engineering and				10,685,650	0	0	0	0	10,685,650	
PLANNING, ENGINEERING AND				10,685,650	0	0	0	0	10,685,650	
31 CONSTRUCTION MANAGEMENT										
31.01 Construction Management (S&I)										
31.01.01 Construction Management (				5,628,132	0	0	0	0	5,628,132	
Construction Management (				5,628,132	0	0	0	0	5,628,132	
CONSTRUCTION MANAGEMENT				5,628,132	0	0	0	0	5,628,132	
Phase I Tunnel - Contract				93,820,166	19,527,627	13000000	679,193	2,826,000	129,852,985	
Contingency									28,732,785	
TOTAL INCL OWNER COSTS									158,585,770	

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT

01	LANDS AND DAMAGES								
01.20	General Design Memorandum								
01.20.03	Real Estate Analysis Documents			976,566	0	0	0	976,566	
	General Design Memorandum			976,566	0	0	0	976,566	
	LANDS AND DAMAGES			976,566	0	0	0	976,566	

15	FLOODWAY CONTROL & DIV STRUCT								
15.01	Mob/Demob & Site Prep Work								
15.01.01	Mobilization and Demobilization			574,625	148,393	0	58,127	781,145	
15.01.02	Site Preparation			146,372	65,497	50,000	31,607	293,476	
	Mob/Demob & Site Prep Work			720,998	213,890	50,000	89,734	1,074,621	

15.02	Excavation								
15.02.01	Shaft Support			5,515,254	858,181	0	551,528	6,924,962	
15.02.02	Weekend Maintenance & Watch	116.00	DAY	1,109,321	414,535	0	110,934	1,634,790	14093.02
15.02.03	Setup & Breakdown TBM			487,799	45,884	10,000	48,778	592,461	
15.02.04	Drill & Blast Start Ch/Tail Tun	135919	CY	3,458,505	1,913,678	2,378,583	141,973	7,892,738	58.07
15.02.06	Mole Tunnel - Sandstone & Shale	796921	CY	16,038,581	10176890	5,004,582	249,093	31,469,146	39.49
	Excavation			26,609,460	13409169	7,393,164	1,102,305	48,514,098	

15.03	Rockbolts								
15.03.01	Rockbolts	35041.00	EA	3,323,760	143,553	876,025	332,389	4,675,727	133.44
	Rockbolts	35041.00	EA	3,323,760	143,553	876,025	332,389	4,675,727	133.44

15.04	Grout Inflows								
15.04.01	Grout Inflows	103.00	DAY	1,758,030	262,038	803,795	175,800	2,999,664	29122.95
	Grout Inflows	103.00	DAY	1,758,030	262,038	803,795	175,800	2,999,664	29122.95

15.07	Welded Wire Fabric, w/strapping								
15.07.01	Welded Wire Fabric, w/strapping	94046.00	SF	340,236	67,225	94,060	34,024	535,545	5.69

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
Welded Wire Fabric, w/strapping		94046.00	SF	340,236	67,225	94,060	34,024	535,545	5.69
15.08 Concrete									
15.08.01	Shaft Support			2,054,229	284,290	0	205,422	2,543,941	
15.08.02	Weekend Maintenance & Watch	26.00	DAY	457,647	184,953	0	45,765	688,365	26475.57
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	276,967	22,579	0	27,696	327,241	5454.02
15.08.04	Invert Clean Up	62.00	DAY	1,066,727	253,157	0	106,674	1,426,558	23009.01
15.08.05	Form & Place Concrete	107117	CY	2,202,199	1,290,261	7,077,952	220,217	10,790,629	100.74
Concrete		107117	CY	6,057,769	2,035,240	7,077,952	605,774	15,776,735	147.29
15.09 Contact Grout									
15.09.01	Contact Grout	33.00	DAY	636,223	81,779	57,936	63,622	839,560	25441.20
Contact Grout		33.00	DAY	636,223	81,779	57,936	63,622	839,560	25441.20
15.10 Final Clean Up									
15.10.01	Final Clean Up	16.00	DAY	281,882	39,410	0	28,188	349,480	21842.51
Final Clean Up		16.00	DAY	281,882	39,410	0	28,188	349,480	21842.51
15.11 Instrumentation									
15.11.01	Instrumentation			45,000	130,000	5,000	7,500	187,500	
Instrumentation				45,000	130,000	5,000	7,500	187,500	
15.12 Maint & Protection of Traffic									
15.12.01	Maint & Protection of Traffic			1,280,056	161,829	3,000	132,003	1,576,888	
Maint & Protection of Traffic				1,280,056	161,829	3,000	132,003	1,576,888	
FLOODWAY CONTROL & DIV STRUCT				41,053,414	16544131	16360933	2,571,339	76,529,817	
30 PLANNING, ENGINEERING AND DESIGN									
30.01 Planning, Engineering and Design									
30.01.01	Planning, Engineering and Design			10,685,650	0	0	0	10,685,650	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
Planning, Engineering and Design	10,685,650		0	0	0	0	10,685,650	
PLANNING, ENGINEERING AND DESIGN	10,685,650		0	0	0	0	10,685,650	
31 CONSTRUCTION MANAGEMENT								
31.01 Construction Management (S&I)								
31.01.01 Construction Management (S&I)	5,628,132		0	0	0	0	5,628,132	
Construction Management (S&I)	5,628,132		0	0	0	0	5,628,132	
CONSTRUCTION MANAGEMENT	5,628,132		0	0	0	0	5,628,132	
Phase I Tunnel - Contract A	58,343,763		16544131	16360933	2,571,339		93,820,166	
Prime Contractor's Total Overhead							19,527,627	
SUBTOTAL							113,347,792	
Prime Contractor's Profit							13,000,000	
SUBTOTAL							126,347,792	
Prime Contractor's Bond							679,193	
SUBTOTAL							127,026,985	
Insurance and Permits							2,826,000	
TOTAL INCL INDIRECTS							129,852,985	
Contingency							28,732,785	
TOTAL INCL OWNER COSTS							158,585,770	

Tue 25 Jul 1995

U.S. Army Corps of Engineers

TIME 12:04:33

PROJECT PHICA2: Phase I Tunnel - Contract A - Outlet to Workshaft #2B

ERROR REPORT

FINAL ESTIMATE

ERROR PAGE 1

No errors detected...

* * * END OF ERROR REPORT * * *

ATTACHMENT M-CACES

DA - 2

PHASE I TUNNEL - Contract B

Tue 25 Jul 1995

U.S. Army Corps of Engineers
PROJECT PHICB2: Phase I Tunnel - Contract B - WS #2B to Hook Hole Shaft #5
FINAL ESTIMATE

TIME 14:38:46

TITLE PAGE 1

Phase I Tunnel - Contract B
WS #2B to Hook Hole Shaft #5
Sta 163 + 15 to Sta 483 + 98
Passaic River
Flood Damage Reduction Project

Designed By: Engineering Div, Nashville Dist
Estimated By: H.F. (Bud) Kiefer, CENAN-PR-T

Prepared By: Civil Design Team, Tech Eng Br.
Passaic River Division

Date: 02/17/95
Est Construction Time: 1029 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

Tue 25 Jul 1995

U.S. Army Corps of Engineers

TIME 14:38:46

PROJECT PHICB2: Phase I Tunnel - Contract B - WS #2B to Hook Hole Shaft #5

TABLE OF CONTENTS

FINAL ESTIMATE

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	4
PROJECT DIRECT SUMMARY - LEVEL 3.....	7

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

	QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT NOTES

01 LANDS AND DAMAGES						
01.20 General Design Memorandum						
01.20.03			1,647,956	247,193	1,895,149	
			-----	-----	-----	
			1,647,956	247,193	1,895,149	
			-----	-----	-----	
			1,647,956	247,193	1,895,149	
15 FLOODWAY CONTROL & DIV STRUCT						
15.01 Mob/Demob & Site Prep Work						
15.01.01			1,090,926	229,000	1,319,926	
15.01.02			408,394	100,000	508,394	
			-----	-----	-----	
			1,499,320	329,000	1,828,320	
15.02 Excavation						
15.02.01			16,679,788	5,146,000	21,825,788	
15.02.02	202.00	DAY	3,961,520	1,000,000	4,961,520	24561.98
15.02.03			824,453	233,000	1,057,453	
15.02.04	33123.00	CY	3,975,931	882,500	4,858,431	146.68
15.02.05	17.00	DAY	563,899	125,000	688,899	40523.48
15.02.06	1832336	CY	97,830,851	21,870,000	119,700,851	65.33
			-----	-----	-----	
			123,836,443	29,256,500	153,092,943	
15.03 Rockbolts						
15.03.01	67401.00	EA	11,173,189	3,145,000	14,318,189	212.43
			-----	-----	-----	
	67401.00	EA	11,173,189	3,145,000	14,318,189	212.43
15.04 Grout Inflows						
15.04.01	193.00	DAY	6,828,034	1,980,000	8,808,034	45637.48
			-----	-----	-----	
	193.00	DAY	6,828,034	1,980,000	8,808,034	45637.48
15.07 Welded Wire Fabric						
15.07.01	160430	SF	1,146,416	235,000	1,381,416	8.61

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES
Welded Wire Fabric		160430	SF	1,146,416	235,000	1,381,416	8.61	
15.08 Concrete								
15.08.01	Shaft Support			6,186,398	1,806,700	7,993,098		
15.08.02	Weekend Maintenance & Watch	90.00	DAY	1,657,923	425,000	2,082,923	23143.59	
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	455,381	128,000	583,381	9723.01	
15.08.04	Invert Clean Up	121.00	DAY	3,874,268	955,000	4,829,268	39911.31	
15.08.05	Form & Place Concrete	204958	CY	28,554,980	7,577,078	36,132,058	176.29	
Concrete		204958	CY	40,728,950	10,891,778	51,620,728	251.86	
15.09 Contact Grout								
15.09.01	Contact Grout	19416.00	BAG	2,263,574	536,007	2,799,581	144.19	
Contact Grout		19416.00	BAG	2,263,574	536,007	2,799,581	144.19	
15.10 Final Clean Up								
15.10.01	Final Clean Up	31.00	DAY	942,260	202,000	1,144,260	36911.61	
Final Clean Up		31.00	DAY	942,260	202,000	1,144,260	36911.61	
15.11 Instrumentation								
15.11.01	Instrumentation			254,658	44,000	298,658		
Instrumentation				254,658	44,000	298,658		
15.12 Maint & Protection of Traffic								
15.12.01	Maint & Protection of Traffic			2,868,419	500,000	3,368,419		
Maint & Protection of Traffic				2,868,419	500,000	3,368,419		
FLOODWAY CONTROL & DIV STRUCT				191,541,264	47,119,285	238,660,549		
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation			18,432,045	2,660,000	21,092,045		

PROJECT PHICE2: Phase I Tunnel - Contract B - WS #2B to Hook Hole Shaft #5

FINAL ESTIMATE

SUMMARY PAGE 3

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES
General Design Memorandum				18,432,045	2,660,000	21,092,045		
PLANNING, ENGINEERING AND DESIGN				18,432,045	2,660,000	21,092,045		
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11 Supervision and Administration				9,577,063	2,390,000	11,967,063		
Construction Contracts				9,577,063	2,390,000	11,967,063		
CONSTRUCTION MANAGEMENT				9,577,063	2,390,000	11,967,063		
Phase I Tunnel - Contract B				221,198,328	52,416,478	273,614,806		

	QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT

01 LANDS AND DAMAGES									
01.20 General Design Memorandum									
01.20.03	Real Estate Analysis Docu		1,647,956	0	0	0	0	1,647,956	
	General Design Memorandum		1,647,956	0	0	0	0	1,647,956	
	LANDS AND DAMAGES		1,647,956	0	0	0	0	1,647,956	
15 FLOODWAY CONTROL & DIV STRUCT									
15.01 Mob/Demob & Site Prep Work									
15.01.01	Mobilization and Demobili		783,951	146,263	123,122	11,391	26,199	1,090,926	
15.01.02	Site Preparation		293,476	54,754	46,091	4,264	9,808	408,394	
	Mob/Demob & Site Prep Wor		1,077,427	201,017	169,213	15,655	36,007	1,499,320	
15.02 Excavation									
15.02.01	Shaft Support		11,986,270	2,236,295	1,882,483	174,164	400,577	16,679,788	
15.02.02	Weekend Maintenance & Wat	202.00 DAY	2,846,790	531,129	447,098	41,365	95,139	3,961,520	19611.49
15.02.03	Setup & Breakdown TBM		592,461	110,536	93,048	8,609	19,800	824,453	
15.02.04	Drill & Blast Start Ch/Ta	33123.00 CY	2,857,145	533,062	448,724	41,515	95,485	3,975,931	120.04
15.02.05	Move TBM's Back	17.00 DAY	405,224	75,603	63,642	5,888	13,542	563,899	33170.54
15.02.06	Mole Tunnel - S/Shale & B	1832336 CY	70,302,269	13,116,391	11041202	1,021,512	2,349,478	97,830,851	53.39
	Excavation		88,990,158	16,603,016	13976196	1,293,052	2,974,020	123,836,443	
15.03 Rockbolts									
15.03.01	Rockbolts	67401.00 EA	8,029,170	1,498,013	1,261,007	116,666	268,332	11,173,189	165.77
	Rockbolts	67401.00 EA	8,029,170	1,498,013	1,261,007	116,666	268,332	11,173,189	165.77
15.04 Grout Inflows									
15.04.01	Grout Inflows	193.00 DAY	4,906,696	915,449	770,613	71,296	163,980	6,828,034	35378.41
	Grout Inflows	193.00 DAY	4,906,696	915,449	770,613	71,296	163,980	6,828,034	35378.41
15.07 Welded Wire Fabric									
15.07.01	Welded Wire Fabric	160430 SF	823,827	153,702	129,385	11,970	27,532	1,146,416	7.15

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT
Welded Wire Fabric		160430	SF	823,827	153,702	129,385	11,970	27,532	1,146,416	7.15
15.08 Concrete										
15.08.01 Shaft Support				4,445,610	829,424	698,198	64,596	148,571	6,186,398	
15.08.02 Weekend Maintenance & Wat		90.00	DAY	1,191,401	222,281	187,113	17,311	39,816	1,657,923	18421.36
15.08.03 Set Up & Breakdown Concre		60.00	SHF	327,241	61,054	51,394	4,755	10,936	455,381	7589.68
15.08.04 Invert Clean Up		121.00	DAY	2,784,090	519,431	437,250	40,454	93,043	3,874,268	32018.75
15.08.05 Form & Place Concrete		204958	CY	20,519,906	3,828,427	3,222,718	298,160	685,768	28,554,980	139.32
Concrete		204958	CY	29,268,248	5,460,617	4,596,674	425,276	978,135	40,728,950	198.72
15.09 Contact Grout										
15.09.01 Contact Grout		19416.00	BAG	1,626,628	303,482	255,467	23,635	54,361	2,263,574	116.58
Contact Grout		19416.00	BAG	1,626,628	303,482	255,467	23,635	54,361	2,263,574	116.58
15.10 Final Clean Up										
15.10.01 Final Clean Up		31.00	DAY	677,118	126,331	106,344	9,839	22,629	942,260	30395.48
Final Clean Up		31.00	DAY	677,118	126,331	106,344	9,839	22,629	942,260	30395.48
15.11 Instrumentation										
15.11.01 Instrumentation				183,000	34,143	28,741	2,659	6,116	254,658	
Instrumentation				183,000	34,143	28,741	2,659	6,116	254,658	
15.12 Maint & Protection of Traffic										
15.12.01 Maint & Protection of Tra				2,061,276	384,575	323,730	29,951	68,887	2,868,419	
Maint & Protection of Tra				2,061,276	384,575	323,730	29,951	68,887	2,868,419	
FLOODWAY CONTROL & DIV ST				137,643,548	25,680,346	21617370	2,000,000	4,600,000	191,541,264	
30 PLANNING, ENGINEERING AND DESIGN										
30.20 General Design Memorandum										
30.20.08 Final Report Documentatio				18,432,045	0	0	0	0	18,432,045	

	QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT
General Design Memorandum			18,432,045	0	0	0	0	18,432,045	
PLANNING, ENGINEERING AND			18,432,045	0	0	0	0	18,432,045	
31 CONSTRUCTION MANAGEMENT									
31.23 Construction Contracts									
31.23.11 Supervision and Administr			9,577,063	0	0	0	0	9,577,063	
Construction Contracts			9,577,063	0	0	0	0	9,577,063	
CONSTRUCTION MANAGEMENT			9,577,063	0	0	0	0	9,577,063	
Phase I Tunnel - Contract			167,300,612	25,680,346	21617370	2,000,000	4,600,000	221,198,328	
Contingency								52,416,478	
TOTAL INCL OWNER COSTS								273,614,806	

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT

01 LANDS AND DAMAGES									
01.20 General Design Memorandum									
01.20.03	Real Estate Analysis Documents			1,647,956	0	0	0	1,647,956	
	General Design Memorandum			1,647,956	0	0	0	1,647,956	
	LANDS AND DAMAGES			1,647,956	0	0	0	1,647,956	

15 FLOODWAY CONTROL & DIV STRUCT									
15.01 Mob/Demob & Site Prep Work									
15.01.01	Mobilization and Demobilization			574,625	151,198	0	58,127	783,951	
15.01.02	Site Preparation			146,372	65,497	50,000	31,607	293,476	
	Mob/Demob & Site Prep Work			720,998	216,695	50,000	89,734	1,077,427	

15.02 Excavation									
15.02.01	Shaft Support			9,552,001	1,479,069	0	955,200	11,986,270	
15.02.02	Weekend Maintenance & Watch	202.00	DAY	1,931,749	721,863	0	193,178	2,846,790	14093.02
15.02.03	Setup & Breakdown TBM			487,799	45,884	10,000	48,778	592,461	
15.02.04	Drill & Blast Start Ch/Tail Tun	33123.00	CY	905,261	1,331,390	579,653	40,841	2,857,145	86.26
15.02.05	Move TBM's Back	17.00	DAY	118,501	24,872	250,000	11,851	405,224	23836.69
15.02.06	Mole Tunnel - S/Shale & Basalt	1832336	CY	36,972,257	22425075	10322621	582,316	70,302,269	38.37
	Excavation			49,967,568	26028153	11162274	1,832,164	88,990,158	

15.03 Rockbolts									
15.03.01	Rockbolts	67401.00	EA	5,549,492	239,682	1,685,025	554,971	8,029,170	119.13
	Rockbolts	67401.00	EA	5,549,492	239,682	1,685,025	554,971	8,029,170	119.13

15.04 Grout Inflows									
15.04.01	Grout Inflows	193.00	DAY	3,294,173	491,004	792,107	329,412	4,906,696	25423.30
	Grout Inflows	193.00	DAY	3,294,173	491,004	792,107	329,412	4,906,696	25423.30

15.07 Welded Wire Fabric									
15.07.01	Welded Wire Fabric	160430	SF	573,029	113,279	80,215	57,303	823,827	5.14

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
Welded Wire Fabric		160430	SF	573,029	113,279	80,215	57,303	823,827	5.14
15.08 Concrete									
15.08.01	Shaft Support			3,601,182	484,311	0	360,117	4,445,610	
15.08.02	Weekend Maintenance & Watch	90.00	DAY	792,081	320,110	0	79,209	1,191,401	13237.78
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	276,967	22,579	0	27,696	327,241	5454.02
15.08.04	Invert Clean Up	121.00	DAY	2,081,838	494,065	0	208,187	2,784,090	23009.01
15.08.05	Form & Place Concrete	204958	CY	3,986,739	2,488,775	13645724	398,668	20,519,906	100.12
Concrete		204958	CY	10,738,807	3,809,840	13645724	1,073,877	29,268,248	142.80
15.09 Contact Grout									
15.09.01	Contact Grout	19416.00	BAG	1,253,167	140,387	107,759	125,315	1,626,628	83.78
Contact Grout		19416.00	BAG	1,253,167	140,387	107,759	125,315	1,626,628	83.78
15.10 Final Clean Up									
15.10.01	Final Clean Up	31.00	DAY	546,146	76,357	0	54,615	677,118	21842.51
Final Clean Up		31.00	DAY	546,146	76,357	0	54,615	677,118	21842.51
15.11 Instrumentation									
15.11.01	Instrumentation			40,000	130,000	6,000	7,000	183,000	
Instrumentation				40,000	130,000	6,000	7,000	183,000	
15.12 Maint & Protection of Traffic									
15.12.01	Maint & Protection of Traffic			1,673,920	208,964	5,000	173,392	2,061,276	
Maint & Protection of Traffic				1,673,920	208,964	5,000	173,392	2,061,276	
FLOODWAY CONTROL & DIV STRUCT				74,357,301	31454360	27534103	4,297,784	137,643,548	
30 PLANNING, ENGINEERING AND DESIGN									
30.20 General Design Memorandum									
30.20.08	Final Report Documentation			18,432,045	0	0	0	18,432,045	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
General Design Memorandum	18,432,045		0	0	0	0	18,432,045	
PLANNING, ENGINEERING AND DESIGN	18,432,045		0	0	0	0	18,432,045	
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11 Supervision and Administration	9,577,063		0	0	0	0	9,577,063	
Construction Contracts	9,577,063		0	0	0	0	9,577,063	
CONSTRUCTION MANAGEMENT	9,577,063		0	0	0	0	9,577,063	
Phase I Tunnel - Contract B	104014365		31454360	27534103	4,297,784		167,300,612	
Prime Contractor's Total Overhead							25,680,346	
SUBTOTAL							192,980,958	
Prime Contractor's Profit							21,617,370	
SUBTOTAL							216,598,328	
Prime Contractor's Bond							2,000,000	
SUBTOTAL							216,598,328	
Insurance and Permits							4,600,000	
TOTAL INCL INDIRECTS							221,198,328	
Contingency							52,416,478	
TOTAL INCL OWNER COSTS							273,614,806	

Tue 25 Jul 1995

U.S. Army Corps of Engineers

TIME 14:38:46

PROJECT PHICB2: Phase I Tunnel - Contract B - WS #2B to Hook Hole Shaft #5

ERROR REPORT

FINAL ESTIMATE

ERROR PAGE 1

No errors detected...

* * * END OF ERROR REPORT * * *

ATTACHMENT M-CACES

DA - 3

PHASE I TUNNEL - Contract C

Tue 25 Jul 1995

U.S. Army Corps of Engineers
PROJECT PHICC2: Phase I Tunnel - Contract C - WS #2 to WS #5
FINAL ESTIMATE

TIME 16:12:34

TITLE PAGE 1

Phase I Tunnel - Contract C
WS #2 to WS #5
Sta 623 + 76 to Sta 483 + 98
WS #2 to WS #3
Sta 623 + 76 to Sta 843 + 47

Designed By: Engineering Div, Nashville Dist
Estimated By: H.F. (Bud) Kiefer, CENAN-PR-T

Prepared By: Civil Design Team, Tech Eng Br.
Passaic River Division

Date: 02/17/95
Est Construction Time: 1281 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

Tue 25 Jul 1995

U.S. Army Corps of Engineers

TIME 16:12:34

PROJECT PHICC2: Phase I Tunnel - Contract C - WS #2 to WS #5

TABLE OF CONTENTS

FINAL ESTIMATE

CONTENTS PAGE 1

SUMMARY REPORTS

SUMMARY PAGE

PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	4
PROJECT DIRECT SUMMARY - LEVEL 3.....	7

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents			1,892,097	283,815	2,175,912		
	General Design Memorandum			1,892,097	283,815	2,175,912		
	LANDS AND DAMAGES			1,892,097	283,815	2,175,912		

15 FLOODWAY CONTROL & DIV STRUCT								
15.01 Mob/Demob & Site Prep Work								
15.01.01	Mobilization and Demobilization			1,107,932	76,500	1,184,432		
15.01.02	Site Preparation			402,333	33,500	435,833		
	Mob/Demob & Site Prep Work			1,510,265	110,000	1,620,265		

15.02 Excavation								
15.02.01	Shaft Support			22,817,905	6,155,000	28,972,905		
15.02.02	Weekend Maintenance & Watch	282.00	DAY	5,448,353	1,160,000	6,608,353	23433.88	
15.02.03	Setup & Breakdown TBM			1,624,433	395,000	2,019,433		
15.02.04	Drill & Blast Start Ch/Tail Tun	39385.00	CY	4,772,906	871,500	5,644,406	143.31	
15.02.05	Move TBM's Back	11.00	DAY	206,240	45,000	251,240	22839.98	
15.02.06	Mole Tunnel - Sandstone & Shale	1412100	CY	68,556,849	13,231,313	81,788,162	57.92	
15.02.07	Mole Tunnel - Basalt	613168	CY	39,371,670	5,177,365	44,549,035	72.65	
	Excavation			142,798,357	27,035,178	169,833,535		

15.03 Rockbolts								
15.03.01	Rockbolts	75760.00	EA	14,262,763	3,295,000	17,557,763	231.76	
	Rockbolts	75760.00	EA	14,262,763	3,295,000	17,557,763	231.76	

15.04 Grout Inflows								
15.04.01	Grout Inflows	230.00	DAY	9,174,616	2,280,000	11,454,616	49802.68	
	Grout Inflows	230.00	DAY	9,174,616	2,280,000	11,454,616	49802.68	

15.05 Fault Zone								

PROJECT PHICC2: Phase I Tunnel - Contract C - WS #2 to WS #5

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES
15.05.01	Fault Zone			2,498,089	640,000	3,138,089		
	Fault Zone			2,498,089	640,000	3,138,089		
15.07	Welded Wire Fabric, w/strapping							
15.07.01	Welded Wire Fabric	224046	SF	1,740,614	330,000	2,070,614	9.24	
	Welded Wire Fabric, w/strapping	224046	SF	1,740,614	330,000	2,070,614	9.24	
15.08	Concrete							
15.08.01	Shaft Support			6,678,166	1,429,700	8,107,866		
15.08.02	Weekend Maintenance & Watch	98.00	DAY	1,778,498	276,000	2,054,498	20964.27	
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	448,622	63,000	511,622	8527.03	
15.08.04	Invert Clean Up	136.00	DAY	4,289,917	437,000	4,726,917	34756.74	
15.08.05	Form & Place Concrete	226946	CY	30,475,976	4,527,078	35,003,054	154.24	
	Concrete	226946	CY	43,671,179	6,732,778	50,403,957	222.10	
15.09	Contact Grout							
15.09.01	Contact Grout	72.00	DAY	2,466,834	246,007	2,712,841	37678.34	
	Contact Grout	72.00	DAY	2,466,834	246,007	2,712,841	37678.34	
15.10	Final Clean Up							
15.10.01	Final Clean Up	35.00	DAY	1,048,052	77,000	1,125,052	32144.34	
	Final Clean Up	31.00	DAY	1,048,052	77,000	1,125,052	36291.99	
15.11	Instrumentation							
15.11.01	Instrumentation			258,418	45,000	303,418		
	Instrumentation			258,418	45,000	303,418		
15.12	Maint & Protection of Traffic							
15.12.01	Maint & Protection of Traffic			3,649,062	495,000	4,144,062		
	Maint & Protection of Traffic			3,649,062	495,000	4,144,062		
	FLOODWAY CONTROL & DIV STRUCT			223,078,249	41,285,963	264,364,212		

	QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT NOTES

30	PLANNING, ENGINEERING AND DESIGN					
30.20	General Design Memorandum					
30.20.08			20,499,006	2,960,000	23,459,006	
			-----	-----	-----	
			20,499,006	2,960,000	23,459,006	
			-----	-----	-----	
			20,499,006	2,960,000	23,459,006	
31	CONSTRUCTION MANAGEMENT					
31.23	Construction Contracts					
31.23.11			11,153,912	2,790,000	13,943,912	
			-----	-----	-----	
			11,153,912	2,790,000	13,943,912	
			-----	-----	-----	
			11,153,912	2,790,000	13,943,912	
			-----	-----	-----	
			256,623,264	47,319,778	303,943,042	

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT

01 LANDS AND DAMAGES										
01.20 General Design Memorandum										
01.20.03	Real Estate Analysis Docu			1,892,097	0	0	0	0	1,892,097	

	General Design Memorandum			1,892,097	0	0	0	0	1,892,097	

	LANDS AND DAMAGES			1,892,097	0	0	0	0	1,892,097	

15 FLOODWAY CONTROL & DIV STRUCT										
15.01 Mob/Demob & Site Prep Work										
15.01.01	Mobilization and Demobili			808,167	143,544	115,014	14,900	26,308	1,107,932	
15.01.02	Site Preparation			293,476	52,126	41,766	5,411	9,553	402,333	

	Mob/Demob & Site Prep Wor			1,101,643	195,670	156,780	20,310	35,861	1,510,265	

15.02 Excavation										
15.02.01	Shaft Support			16,644,227	2,956,287	2,368,720	306,860	541,812	22,817,905	
15.02.02	Weekend Maintenance & Wat	282.00	DAY	3,974,231	705,888	565,592	73,271	129,371	5,448,353	19320.40
15.02.03	Setup & Breakdown TBM			1,184,922	210,461	168,632	21,846	38,572	1,624,433	
15.02.04	Drill & Blast Start Ch/Ta	39385.00	CY	3,481,535	618,378	495,474	64,187	113,333	4,772,906	121.19
15.02.05	Move TBM's Back	11.00	DAY	150,439	26,720	21,410	2,774	4,897	206,240	18749.07
15.02.06	Mole Tunnel - Sandstone &	1412100	CY	50,007,910	8,882,222	7,116,866	921,966	1,627,885	68,556,849	48.55
15.02.07	Mole Tunnel - Basalt	613168	CY	28,719,158	5,100,992	4,087,161	529,478	934,882	39,371,670	64.21

	Excavation			104,162,421	18,500,949	14823855	1,920,380	3,390,751	142,798,357	

15.03 Rockbolts										
15.03.01	Rockbolts	75760.00	EA	10,403,789	1,847,883	1,480,613	191,808	338,670	14,262,763	188.26

	Rockbolts	75760.00	EA	10,403,789	1,847,883	1,480,613	191,808	338,670	14,262,763	188.26

15.04 Grout Inflows										
15.04.01	Grout Inflows	230.00	DAY	6,692,306	1,188,663	952,414	123,382	217,852	9,174,616	39889.64

	Grout Inflows	230.00	DAY	6,692,306	1,188,663	952,414	123,382	217,852	9,174,616	39889.64

15.05 Fault Zone										

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT
15.05.01	Fault Zone			1,822,199	323,652	259,326	33,595	59,317	2,498,089	
	Fault Zone			1,822,199	323,652	259,326	33,595	59,317	2,498,089	
15.07	Welded Wire Fabric, w/strapp									
15.07.01	Welded Wire Fabric	224046	SF	1,269,669	225,514	180,693	23,408	41,331	1,740,614	7.77
	Welded Wire Fabric, w/str	224046	SF	1,269,669	225,514	180,693	23,408	41,331	1,740,614	7.77
15.08	Concrete									
15.08.01	Shaft Support			4,871,302	865,223	693,258	89,809	158,573	6,678,166	
15.08.02	Weekend Maintenance & Wat	98.00	DAY	1,297,303	230,422	184,625	23,918	42,231	1,778,498	18147.94
15.08.03	Set Up & Breakdown Concre	60.00	SHF	327,241	58,123	46,571	6,033	10,653	448,622	7477.03
15.08.04	Invert Clean Up	136.00	DAY	3,129,225	555,801	445,335	57,692	101,864	4,289,917	31543.51
15.08.05	Form & Place Concrete	226946	CY	22,230,308	3,948,466	3,163,702	409,847	723,653	30,475,976	134.29
	Concrete	226946	CY	31,855,379	5,658,036	4,533,492	587,299	1,036,974	43,671,179	192.43
15.09	Contact Grout									
15.09.01	Contact Grout	72.00	DAY	1,799,400	319,603	256,081	33,174	58,575	2,466,834	34261.58
	Contact Grout	72.00	DAY	1,799,400	319,603	256,081	33,174	58,575	2,466,834	34261.58
15.10	Final Clean Up									
15.10.01	Final Clean Up	35.00	DAY	764,488	135,786	108,798	14,094	24,886	1,048,052	29944.34
	Final Clean Up	31.00	DAY	764,488	135,786	108,798	14,094	24,886	1,048,052	33808.12
15.11	Instrumentation									
15.11.01	Instrumentation			188,500	33,481	26,826	3,475	6,136	258,418	
	Instrumentation			188,500	33,481	26,826	3,475	6,136	258,418	
15.12	Maint & Protection of Traffi									
15.12.01	Maint & Protection of Tra			2,661,761	472,772	378,808	49,073	86,647	3,649,062	
	Maint & Protection of Tra			2,661,761	472,772	378,808	49,073	86,647	3,649,062	
	FLOODWAY CONTROL & DIV ST			162,721,554	28,902,008	23157687	3,000,000	5,297,000	223,078,249	

	QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT

30 PLANNING, ENGINEERING AND DESIG									
30.20 General Design Memorandum									
30.20.08			20,499,006	0	0	0	0	20,499,006	
			-----	-----	-----	-----	-----	-----	
			20,499,006	0	0	0	0	20,499,006	
			-----	-----	-----	-----	-----	-----	
			20,499,006	0	0	0	0	20,499,006	
31 CONSTRUCTION MANAGEMENT									
31.23 Construction Contracts									
31.23.11			11,153,912	0	0	0	0	11,153,912	
			-----	-----	-----	-----	-----	-----	
			11,153,912	0	0	0	0	11,153,912	
			-----	-----	-----	-----	-----	-----	
			11,153,912	0	0	0	0	11,153,912	
			-----	-----	-----	-----	-----	-----	
			196,266,569	28,902,008	23157687	3,000,000	5,297,000	256,623,264	
								47,319,778	

								303,943,042	

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT

01 LANDS AND DAMAGES									
01.20 General Design Memorandum									
01.20.03	Real Estate Analysis Documents			1,892,097	0	0	0	1,892,097	
	General Design Memorandum			1,892,097	0	0	0	1,892,097	
	LANDS AND DAMAGES			1,892,097	0	0	0	1,892,097	

15 FLOODWAY CONTROL & DIV STRUCT									
15.01 Mob/Demob & Site Prep Work									
15.01.01	Mobilization and Demobilization			597,756	149,971	0	60,440	808,167	
15.01.02	Site Preparation			146,372	65,497	50,000	31,607	293,476	
	Mob/Demob & Site Prep Work			744,128	215,468	50,000	92,047	1,101,643	

15.02 Excavation									
15.02.01	Shaft Support			13,262,025	2,056,000	0	1,326,202	16,644,227	
15.02.02	Weekend Maintenance & Watch	282.00	DAY	2,696,798	1,007,750	0	269,684	3,974,231	14093.02
15.02.03	Setup & Breakdown TBM			975,598	91,768	20,000	97,555	1,184,922	
15.02.04	Drill & Blast Start Ch/Tail Tun	39385.00	CY	1,076,994	1,666,683	689,238	48,621	3,481,535	88.40
15.02.05	Move TBM's Back	11.00	DAY	76,677	16,093	50,000	7,668	150,439	13676.27
15.02.06	Mole Tunnel - Sandstone & Shale	1412100	CY	28,410,177	13577916	7,579,368	440,449	50,007,910	35.41
15.02.07	Mole Tunnel - Basalt	613168	CY	14,250,971	10835671	3,249,804	382,712	28,719,158	46.84
	Excavation			60,749,239	29251882	11588410	2,572,890	104,162,421	

15.03 Rockbolts									
15.03.01	Rockbolts	75760.00	EA	7,775,225	335,811	1,515,200	777,553	10,403,789	137.33
	Rockbolts	75760.00	EA	7,775,225	335,811	1,515,200	777,553	10,403,789	137.33

15.04 Grout Inflows									
15.04.01	Grout Inflows	230.00	DAY	3,925,699	585,134	1,788,909	392,564	6,692,306	29096.98
	Grout Inflows	230.00	DAY	3,925,699	585,134	1,788,909	392,564	6,692,306	29096.98

15.05 Fault Zone									

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
15.05.01	Fault Zone			610,147	72,376	1,078,660	61,015	1,822,199	
	Fault Zone			610,147	72,376	1,078,660	61,015	1,822,199	
15.07	Welded Wire Fabric, w/strapping								
15.07.01	Welded Wire Fabric	224046	SF	805,822	159,218	224,046	80,583	1,269,669	5.67
	Welded Wire Fabric, w/strapping	224046	SF	805,822	159,218	224,046	80,583	1,269,669	5.67
15.08	Concrete								
15.08.01	Shaft Support			3,947,269	529,307	0	394,726	4,871,302	
15.08.02	Weekend Maintenance & Watch	98.00	DAY	862,489	348,564	0	86,250	1,297,303	13237.78
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	276,967	22,579	0	27,696	327,241	5454.02
15.08.04	Invert Clean Up	136.00	DAY	2,339,917	555,312	0	233,995	3,129,225	23009.01
15.08.05	Form & Place Concrete	226946	CY	4,366,428	2,572,179	14855064	436,637	22,230,308	97.95
	Concrete	226946	CY	11,793,070	4,027,942	14855064	1,179,303	31,855,379	140.37
15.09	Contact Grout								
15.09.01	Contact Grout	72.00	DAY	1,388,124	153,207	119,258	138,811	1,799,400	24991.67
	Contact Grout	72.00	DAY	1,388,124	153,207	119,258	138,811	1,799,400	24991.67
15.10	Final Clean Up								
15.10.01	Final Clean Up	35.00	DAY	616,617	86,209	0	61,662	764,488	21842.51
	Final Clean Up	31.00	DAY	616,617	86,209	0	61,662	764,488	24660.90
15.11	Instrumentation								
15.11.01	Instrumentation			45,000	130,000	6,000	7,500	188,500	
	Instrumentation			45,000	130,000	6,000	7,500	188,500	
15.12	Maint & Protection of Traffic								
15.12.01	Maint & Protection of Traffic			2,166,249	267,884	5,000	222,629	2,661,761	
	Maint & Protection of Traffic			2,166,249	267,884	5,000	222,629	2,661,761	
	FLOODWAY CONTROL & DIV STRUCT			90,619,320	35285129	31230547	5,586,557	162,721,554	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation		20,499,006	0	0	0	20,499,006	
	General Design Memorandum		20,499,006	0	0	0	20,499,006	
	PLANNING, ENGINEERING AND DESIGN		20,499,006	0	0	0	20,499,006	
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervsion and Administration		11,153,912	0	0	0	11,153,912	
	Construction Contracts		11,153,912	0	0	0	11,153,912	
	CONSTRUCTION MANAGEMENT		11,153,912	0	0	0	11,153,912	
	Phase I Tunnel - Contract C		124164335	35285129	31230547	5,586,557	196,266,569	
	Prime Contractor's Total Overhead						28,902,008	
	SUBTOTAL						225,168,577	
	Prime Contractor's Profit						23,157,687	
	SUBTOTAL						248,326,264	
	Prime Contractor's Bond						3,000,000	
	SUBTOTAL						251,326,264	
	Insurance and Permits						5,297,000	
	TOTAL INCL INDIRECTS						256,623,264	
	Contingency						47,319,778	
	TOTAL INCL OWNER COSTS						303,943,042	

Tue 25 Jul 1995

U.S. Army Corps of Engineers

TIME 16:12:34

PROJECT PHICC2: Phase I Tunnel - Contract C - WS #2 to WS #5

ERROR REPORT

FINAL ESTIMATE

ERROR PAGE 1

No errors detected...

* * * END OF ERROR REPORT * * *

ATTACHMENT M-CACES

DA - 4

WORKSHAFT #2

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:16:13

Eff. Date 06/09/95

PROJECT SHFT02: Tunnel Shaft #2 Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

TITLE PAGE 1

Tunnel Shaft #2 Project Cost
Passaic River Flood Damage
Reduction Project
Main Tunnel
Workshaft #2

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/09/95
Effective Date of Pricing: 06/09/95
Est Construction Time: 378 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:16:13

Eff. Date 06/09/95

PROJECT SHFT02: Tunnel Shaft #2 Project Cost - Passaic River Flood Damage

TABLE OF CONTENTS

FINAL ESTIMATE

CONTENTS PAGE 1

SUMMARY REPORTS

SUMMARY PAGE

PROJECT OWNER SUMMARY - ELEMENT.....1
PROJECT INDIRECT SUMMARY - ELEMENT.....3
PROJECT DIRECT SUMMARY - ELEMENT.....5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:16:13

Eff. Date 06/09/95

PROJECT SHFT02: Tunnel Shaft #2 Project Cost - Passaic River Flood Damage

CONTINGENCIES

FINAL ESTIMATE

TITLE PAGE 2

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00 EA	102,185	15,328	117,513	117512.75	
TOTAL General Design Memorandum		1.00 EA	102,185	15,328	117,513	117512.75	
TOTAL LANDS AND DAMAGES		1.00 EA	102,185	15,328	117,513	117512.75	
15 FLOODWAY CONTROL-DIVERSION STRUC							
15.01 Mob, Demob & Preparatory Work							
TOTAL Mob, Demob & Preparatory Work			590,857	0	590,857		
15.10 Earthwork for Structures							
15.10.02 Site Work							
TOTAL Earthwork for Structures			9,343,775	2,000,000	11,343,775		
15.25 Embedded Metal Work							
15.25.05 Metals							
TOTAL Embedded Metal Work			182,151	30,000	212,151		
15.99 Associated General Items							
15.99.01 Concrete liner							
15.99.02 Site Work							
15.99.03 Railroad Spur							
TOTAL Associated General Items			898,615	158,500	1,057,115		
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			11,015,398	2,188,500	13,203,898		
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08 Final Report Documentation							
			1,022,825	147,727	1,170,552		

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:16:13

Eff. Date 06/09/95

PROJECT SHFT02: Tunnel Shaft #2 Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES
TOTAL General Design Memorandum	1.00	EA	1,022,825	147,727	1,170,552	1170552	
TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,022,825	147,727	1,170,552	1170552	
31 CONSTRUCTION MANAGEMENT							
31.23 Construction Contracts							
31.23.11 Supervision and Administration			550,750	137,688	688,438		
TOTAL Construction Contracts	1.00	EA	550,750	137,688	688,438	688438.00	
TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	550,750	137,688	688,438	688438.00	
TOTAL Tunnel Shaft #2 Project Cost	1.00	EA	12,691,158	2,489,243	15,180,401	15180401	1,2,3,7

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:16:13

Eff. Date 06/09/95

PROJECT SHFT02: Tunnel Shaft #2 Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 3

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST
01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00 EA	102,185	0	0	0	102,185	102185.00
TOTAL General Design Memorandum		1.00 EA	102,185	0	0	0	102,185	102185.00
TOTAL LANDS AND DAMAGES		1.00 EA	102,185	0	0	0	102,185	102185.00
15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01	Mob, Demob & Preparatory Work		500,000	50,000	37,500	3,357	590,857	
TOTAL Mob, Demob & Preparatory Work			500,000	50,000	37,500	3,357	590,857	
15.10 Earthwork for Structures								
15.10.02	Site Work		7,906,962	790,696	593,022	53,094	9,343,775	
TOTAL Earthwork for Structures			7,906,962	790,696	593,022	53,094	9,343,775	
15.25 Embedded Metal Work								
15.25.05	Metals		155,045	13,954	10,853	2,299	182,151	
TOTAL Embedded Metal Work			155,045	13,954	10,853	2,299	182,151	
15.99 Associated General Items								
15.99.01	Concrete liner		727,787	65,501	50,945	7,910	852,143	
15.99.02	Site Work		25,654	2,309	1,796	446	30,205	
15.99.03	Railroad Spur		13,805	1,242	966	253	16,267	
TOTAL Associated General Items			767,246	69,052	53,707	8,609	898,615	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			9,329,254	923,702	695,083	67,360	11,015,398	
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation		1,022,825	0	0	0	1,022,825	

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST
TOTAL General Design Memorandum	1.00	EA	1,022,825	0	0	0	1,022,825	1022825
TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,022,825	0	0	0	1,022,825	1022825
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11 Supervision and Administration			550,750	0	0	0	550,750	
TOTAL Construction Contracts	1.00	EA	550,750	0	0	0	550,750	550750.00
TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	550,750	0	0	0	550,750	550750.00
TOTAL Tunnel Shaft #2 Project Cost	1.00	EA	11,005,014	923,702	695,083	67,360	12,691,158	12691158
CONTING							2,489,243	
TOTAL INCL OWNER COSTS							15,180,401	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST UNIT COST

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00 EA	102,185	0	0	0	102,185 102185.00
TOTAL General Design Memorandum		1.00 EA	102,185	0	0	0	102,185 102185.00
TOTAL LANDS AND DAMAGES		1.00 EA	102,185	0	0	0	102,185 102185.00
15 FLOODWAY CONTROL-DIVERSION STRUC							
15.01 Mob, Demob & Preparatory Work							
			250,000	250,000	0	0	500,000
TOTAL Mob, Demob & Preparatory Work			250,000	250,000	0	0	500,000
15.10 Earthwork for Structures							
15.10.02 Site Work							
			6,077,492	1,656,474	172,997	0	7,906,962
TOTAL Earthwork for Structures			6,077,492	1,656,474	172,997	0	7,906,962
15.25 Embedded Metal Work							
15.25.05 Metals							
			28,190	28,190	98,665	0	155,045
TOTAL Embedded Metal Work			28,190	28,190	98,665	0	155,045
15.99 Associated General Items							
15.99.01 Concrete liner							
			370,807	77,651	279,330	0	727,787
15.99.02 Site Work							
			15,373	1,882	8,398	0	25,654
15.99.03 Railroad Spur							
			1,233	99	12,474	0	13,805
TOTAL Associated General Items			387,413	79,632	300,201	0	767,246
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			6,743,095	2,014,296	571,863	0	9,329,254
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08 Final Report Documentation							
			1,022,825	0	0	0	1,022,825

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:16:13

Eff. Date 06/09/95

PROJECT SHFT02: Tunnel Shaft #2 Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL General Design Memorandum	1.00	EA	1,022,825	0	0	0	1,022,825	1022825
TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,022,825	0	0	0	1,022,825	1022825
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11 Supervision and Administration			550,750	0	0	0	550,750	
TOTAL Construction Contracts	1.00	EA	550,750	0	0	0	550,750	550750.00
TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	550,750	0	0	0	550,750	550750.00
TOTAL Tunnel Shaft #2 Project Cost	1.00	EA	8,418,855	2,014,296	571,863	0	11,005,014	11005014
OVERHEAD							923,702	
SUBTOTAL							11,928,716	
PROFIT							695,083	
SUBTOTAL							12,623,799	
BOND							67,360	
TOTAL INCL INDIRECTS							12,691,158	
CONTING							2,489,243	
TOTAL INCL OWNER COSTS							15,180,401	

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:16:13

Eff. Date 06/09/95

PROJECT SHFT02: Tunnel Shaft #2 Project Cost - Passaic River Flood Damage

ERROR REPORT

FINAL ESTIMATE

ERROR PAGE 1

R2024: 15100203

Tunnel Shaft Crew TSTLE not recognized -- Not repriced

* * * END OF ERROR REPORT * * *

ATTACHMENT M-CACES

DA - 5

WORKSHAFT #2B

Wed 26 Jul 1995

U.S. Army Corps of Engineers

TIME 14:26:26

Eff. Date 06/08/95

PROJECT SHFT2B: Tunnel Shaft #2B Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

TITLE PAGE 1

Tunnel Shaft #2B Project Cost
Passaic River Flood Damage
Reduction Project
Main Tunnel
Workshaft #2B

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/08/95
Effective Date of Pricing: 06/08/95
Est Construction Time: 336 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Wed 26 Jul 1995
Eff. Date 06/08/95
TABLE OF CONTENTS

U.S. Army Corps of Engineers
PROJECT SHFT2B: Tunnel Shaft #2B Project Cost - Passaic River Flood Damage
FINAL ESTIMATE

TIME 14:26:26

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	3
PROJECT DIRECT SUMMARY - ELEMENT.....	5
LABOR COST TO PRIME SUMMARY.....	7

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

Wed 26 Jul 1995

U.S. Army Corps of Engineers

TIME 14:26:26

Eff. Date 06/08/95

PROJECT SHFT2B: Tunnel Shaft #2B Project Cost - Passaic River Flood Damage

CONTINGENCIES

FINAL ESTIMATE

TITLE PAGE 2

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

		QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	4,227	634	4,861	4861.05	
	TOTAL General Design Memorandum	1.00	EA	4,227	634	4,861	4861.05	
	TOTAL LANDS AND DAMAGES	1.00	EA	4,227	634	4,861	4861.05	
15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work			713,378	108,000	821,378		
	TOTAL Mob, Demob & Preparatory Work			713,378	108,000	821,378		
15.10	Earthwork for Structures							
15.10.02	Site Work			9,070,328	1,950,000	11,020,328		
	TOTAL Earthwork for Structures			9,070,328	1,950,000	11,020,328		
15.12	Seepage Control							
15.12.02	Site Work			2,710,836	730,000	3,440,836		
	TOTAL Seepage Control			2,710,836	730,000	3,440,836		
15.25	Embedded Metal Work							
15.25.05	Metals			183,137	30,000	213,137		
	TOTAL Embedded Metal Work			183,137	30,000	213,137		
15.99	Associated General Items							
15.99.01	Concrete @ freeze wall/rock			1,512,568	325,000	1,837,568		
15.99.02	Site Work			8,563	1,000	9,563		
	TOTAL Associated General Items			1,521,131	326,000	1,847,131		
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC	1.00	EA	14,198,810	3,144,000	17,342,810	17342810	
30	PLANNING, ENGINEERING AND DESIGN							

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

30.20	General Design Memorandum						
30.20.08	Final Report Documentation		1,341,523	193,543	1,535,066		
	TOTAL	General Design Memorandum	1.00 EA	1,341,523	193,543	1,535,066	1535066
	TOTAL	PLANNING, ENGINEERING AND DESIGN	1.00 EA	1,341,523	193,543	1,535,066	1535066
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration		709,950	177,488	887,438		
	TOTAL	Construction Contracts	1.00 EA	709,950	177,488	887,438	887438.00
	TOTAL	CONSTRUCTION MANAGEMENT	1.00 EA	709,950	177,488	887,438	887438.00
	TOTAL	Tunnel Shaft #2B Project Cost	1.00 EA	16,254,510	3,515,665	19,770,175	19770175 1,2,3,7

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST UNIT COST

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00 EA	4,227	0	0	0	4,227 4227.00
TOTAL General Design Memorandum		1.00 EA	4,227	0	0	0	4,227 4227.00
TOTAL LANDS AND DAMAGES		1.00 EA	4,227	0	0	0	4,227 4227.00
15 FLOODWAY CONTROL-DIVERSION STRUC							
15.01 Mob, Demob & Preparatory Work							
			600,000	60,000	49,500	3,878	713,378
TOTAL Mob, Demob & Preparatory Work			600,000	60,000	49,500	3,878	713,378
15.10 Earthwork for Structures							
15.10.02 Site Work							
			7,628,771	762,877	629,374	49,306	9,070,328
TOTAL Earthwork for Structures			7,628,771	762,877	629,374	49,306	9,070,328
15.12 Seepage Control							
15.12.02 Site Work							
			2,280,000	228,000	188,100	14,736	2,710,836
TOTAL Seepage Control			2,280,000	228,000	188,100	14,736	2,710,836
15.25 Embedded Metal Work							
15.25.05 Metals							
			155,045	13,954	11,830	2,308	183,137
TOTAL Embedded Metal Work			155,045	13,954	11,830	2,308	183,137
15.99 Associated General Items							
15.99.01 Concrete @ freeze wall/rock							
			1,286,177	115,756	98,135	12,500	1,512,568
15.99.02 Site Work							
			7,229	651	552	131	8,563
TOTAL Associated General Items			1,293,406	116,407	98,687	12,631	1,521,131
TOTAL FLOODWAY CONTROL-DIVERSION STRUC		1.00 EA	11,957,222	1,181,238	977,490	82,859	14,198,810 14198810

30 PLANNING, ENGINEERING AND DESIGN

Wed 26 Jul 1995

U.S. Army Corps of Engineers

TIME 14:26:26

Eff. Date 06/08/95

PROJECT SHFT2B: Tunnel Shaft #2B Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

30.20	General Design Memorandum							
30.20.08			1,341,523	0	0	0	1,341,523	

TOTAL	1.00	EA	1,341,523	0	0	0	1,341,523	1341523

TOTAL	1.00	EA	1,341,523	0	0	0	1,341,523	1341523
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11			709,950	0	0	0	709,950	

TOTAL	1.00	EA	709,950	0	0	0	709,950	709950.00

TOTAL	1.00	EA	709,950	0	0	0	709,950	709950.00

TOTAL	1.00	EA	14,012,922	1,181,238	977,490	82,859	16,254,510	16254510
CONTING							3,515,665	

TOTAL							19,770,175	

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01	LANDS AND DAMAGES								
01.20	General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00	EA	4,227	0	0	0	4,227	4227.00
	TOTAL General Design Memorandum	1.00	EA	4,227	0	0	0	4,227	4227.00
	TOTAL LANDS AND DAMAGES	1.00	EA	4,227	0	0	0	4,227	4227.00

15	FLOODWAY CONTROL-DIVERSION STRUC								
15.01	Mob, Demob & Preparatory Work			300,000	300,000	0	0	600,000	
	TOTAL Mob, Demob & Preparatory Work			300,000	300,000	0	0	600,000	
15.10	Earthwork for Structures								
15.10.02	Site Work			5,926,782	1,583,096	118,893	0	7,628,771	
	TOTAL Earthwork for Structures			5,926,782	1,583,096	118,893	0	7,628,771	
15.12	Seepage Control								
15.12.02	Site Work			0	0	2,280,000	0	2,280,000	
	TOTAL Seepage Control			0	0	2,280,000	0	2,280,000	
15.25	Embedded Metal Work								
15.25.05	Metals			28,190	28,190	98,665	0	155,045	
	TOTAL Embedded Metal Work			28,190	28,190	98,665	0	155,045	
15.99	Associated General Items								
15.99.01	Concrete @ freeze wall/rock			630,059	122,144	533,974	0	1,286,177	
15.99.02	Site Work			3,898	477	2,855	0	7,229	
	TOTAL Associated General Items			633,957	122,621	536,828	0	1,293,406	
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC	1.00	EA	6,888,929	2,033,907	3,034,386	0	11,957,222	11957222

30	PLANNING, ENGINEERING AND DESIGN								

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

30.20	General Design Memorandum							
30.20.08			1,341,523	0	0	0	1,341,523	

	TOTAL	1.00 EA	1,341,523	0	0	0	1,341,523	1341523

	TOTAL	1.00 EA	1,341,523	0	0	0	1,341,523	1341523
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11			709,950	0	0	0	709,950	

	TOTAL	1.00 EA	709,950	0	0	0	709,950	709950.00

	TOTAL	1.00 EA	709,950	0	0	0	709,950	709950.00

	TOTAL	1.00 EA	8,944,629	2,033,907	3,034,386	0	14,012,922	14012922
OVERHEAD							1,181,238	

SUBTOTAL							15,194,160	
PROFIT							977,490	

SUBTOTAL							16,171,650	
BOND							82,859	

TOTAL INCL INDIRECTS							16,254,510	
CONTING							3,515,665	

TOTAL INCL OWNER COSTS							19,770,175	

Wed 26 Jul 1995

U.S. Army Corps of Engineers

TIME 14:26:26

Eff. Date 06/08/95

PROJECT SHFT2B: Tunnel Shaft #2B Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 7

** LABOR COST TO PRIME SUMMARY **

				*** DATABASE ***		*** TO PRIME ***	
SRC LABOR ID	DESCRIPTION	TYPE	HOURS	RATE	TOTAL	RATE	TOTAL

ATTACHMENT M-CACES

DA - 6

WORKSHAFT #2C

Fri 11 Aug 1995
Eff. Date 06/27/95

U.S. Army Corps of Engineers
PROJECT SHFT2C: Tunnel Shaft #2C Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:22:15
TITLE PAGE 1

Tunnel Shaft #2C Project Cost
Passaic River
Flood Damage Reduction Project
Main Tunnel
Work Shaft #2C

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/27/95
Effective Date of Pricing: 06/27/95
Est Construction Time: 378 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Fri 11 Aug 1995
Eff. Date 06/27/95
TABLE OF CONTENTS

U.S. Army Corps of Engineers
PROJECT SHFT2C: Tunnel Shaft #2C Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:22:15

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	3
PROJECT DIRECT SUMMARY - ELEMENT.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

01	LANDS AND DAMAGES						
01.20	General Design Memorandum						
01.20.03			Real Estate Analysis Documents	4,945	742	5,687	
	TOTAL		General Design Memorandum	4,945	742	5,687	
	TOTAL		LANDS AND DAMAGES	4,945	742	5,687	

15	FLOODWAY CONTROL-DIVERSION STRUC						
15.01	Mob, Demob & Preparatory Work						
				3,150,876	630,175	3,781,052	
	TOTAL		Mob, Demob & Preparatory Work	3,150,876	630,175	3,781,052	

15.10	Earthwork for Structures						
15.10.02	Site Work						
				16,192,004	3,238,401	19,430,405	
	TOTAL		Earthwork for Structures	16,192,004	3,238,401	19,430,405	

15.12	Seepage Control						
15.12.02	Site Work						
				2,031,446	406,289	2,437,735	
	TOTAL		Seepage Control	2,031,446	406,289	2,437,735	

15.25	Embedded Metal Work						
15.25.05	Metals						
				225,655	45,131	270,787	
	TOTAL		Embedded Metal Work	225,655	45,131	270,787	

15.99	Associated General Items						
15.99.01	Concrete liner (TBM SHAFT)						
				885,355	177,071	1,062,426	
15.99.02	Site Work						
				20,133	4,027	24,159	
15.99.03	Concrete liner (Vent Shaft)						
				243,878	48,776	292,654	
15.99.04	Dewatering Facility						
				15,973,482	3,194,696	19,168,178	
15.99.05	Concrete Divider Wall (TBM Shft)						
				1,043,950	208,790	1,252,741	
15.99.06	Conc Platforms @ 9 Levels (TBM)						
				45,355	9,071	54,426	
	TOTAL		Associated General Items	18,212,153	3,642,431	21,854,584	

Fri 11 Aug 1995
Eff. Date 06/27/95

U.S. Army Corps of Engineers
PROJECT SHFT2C: Tunnel Shaft #2C Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:22:15

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			39,812,135	7,962,427	47,774,562		
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08 Final Report Documentation			3,700,675	534,453	4,235,128		
TOTAL General Design Memorandum			3,700,675	534,453	4,235,128		
TOTAL PLANNING, ENGINEERING AND DESIGN			3,700,675	534,453	4,235,128		
31 CONSTRUCTION MAMNAGEMENT							
31.23 Construction Contracts							
31.23.11 Supervision and Administration			1,990,600	497,650	2,488,250		
TOTAL Construction Contracts			1,990,600	497,650	2,488,250		
TOTAL CONSTRUCTION MAMNAGEMENT			1,990,600	497,650	2,488,250		
TOTAL Tunnel Shaft #2C Project Cost	1.00	EA	45,508,355	8,995,272	54,503,627	54503627	1,2,3,7

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03 Real Estate Analysis Documents			4,945	0	0	0	4,945	
TOTAL General Design Memorandum			4,945	0	0	0	4,945	
TOTAL LANDS AND DAMAGES			4,945	0	0	0	4,945	

15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01 Mob, Demob & Preparatory Work			2,500,000	350,000	285,000	15,876	3,150,876	
TOTAL Mob, Demob & Preparatory Work			2,500,000	350,000	285,000	15,876	3,150,876	
15.10 Earthwork for Structures								
15.10.02 Site Work			12,847,222	1,798,611	1,464,583	81,587	16,192,004	
TOTAL Earthwork for Structures			12,847,222	1,798,611	1,464,583	81,587	16,192,004	
15.12 Seepage Control								
15.12.02 Site Work			1,611,810	225,653	183,746	10,236	2,031,446	
TOTAL Seepage Control			1,611,810	225,653	183,746	10,236	2,031,446	
15.25 Embedded Metal Work								
15.25.05 Metals			178,474	24,986	20,346	1,849	225,655	
TOTAL Embedded Metal Work			178,474	24,986	20,346	1,849	225,655	
15.99 Associated General Items								
15.99.01 Concrete liner (TBM SHAFT)			700,853	98,119	79,897	6,485	885,355	
15.99.02 Site Work			15,818	2,214	1,803	298	20,133	
15.99.03 Concrete liner (Vent Shaft)			193,056	27,028	22,008	1,786	243,878	
15.99.04 Dewatering Facility			12,656,415	1,771,898	1,442,831	102,337	15,973,482	
15.99.05 Concrete Divider Wall (TBM Shft)			826,399	115,696	94,209	7,647	1,043,950	
15.99.06 Conc Platforms @ 9 Levels (TBM)			35,893	5,025	4,092	345	45,355	
TOTAL Associated General Items			14,428,433	2,019,981	1,644,841	118,897	18,212,153	

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:22:15

Eff. Date 06/27/95

PROJECT SHFT2C: Tunnel Shaft #2C Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			31,565,940	4,419,232	3,598,517	228,447	39,812,135	
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08 Final Report Documentation			3,700,675	0	0	0	3,700,675	
TOTAL General Design Memorandum			3,700,675	0	0	0	3,700,675	
TOTAL PLANNING, ENGINEERING AND DESIGN			3,700,675	0	0	0	3,700,675	
31 CONSTRUCTION MAMNAGEMENT								
31.23 Construction Contracts								
31.23.11 Supervision and Administration			1,990,600	0	0	0	1,990,600	
TOTAL Construction Contracts			1,990,600	0	0	0	1,990,600	
TOTAL CONSTRUCTION MAMNAGEMENT			1,990,600	0	0	0	1,990,600	
TOTAL Tunnel Shaft #2C Project Cost	1.00	EA	37,262,160	4,419,232	3,598,517	228,447	45,508,355	45508355
CONTING							8,995,272	
TOTAL INCL OWNER COSTS							54,503,627	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03 Real Estate Analysis Documents			4,945	0	0	0	4,945	
TOTAL General Design Memorandum			4,945	0	0	0	4,945	
TOTAL LANDS AND DAMAGES			4,945	0	0	0	4,945	

15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01 Mob, Demob & Preparatory Work			1,250,000	1,250,000	0	0	2,500,000	
TOTAL Mob, Demob & Preparatory Work			1,250,000	1,250,000	0	0	2,500,000	

15.10 Earthwork for Structures								
15.10.02 Site Work			9,941,709	2,725,002	180,511	0	12,847,222	
TOTAL Earthwork for Structures			9,941,709	2,725,002	180,511	0	12,847,222	

15.12 Seepage Control								
15.12.02 Site Work			0	0	0	1,611,810	1,611,810	
TOTAL Seepage Control			0	0	0	1,611,810	1,611,810	

15.25 Embedded Metal Work								
15.25.05 Metals			34,819	28,430	115,225	0	178,474	
TOTAL Embedded Metal Work			34,819	28,430	115,225	0	178,474	

15.99 Associated General Items								
15.99.01 Concrete liner (TBM SHAFT)			339,590	61,674	299,589	0	700,853	
15.99.02 Site Work			9,179	1,124	5,515	0	15,818	
15.99.03 Concrete liner (Vent Shaft)			105,797	12,528	74,731	0	193,056	
15.99.04 Dewatering Facility			4,202,611	110,289	8,343,515	0	12,656,415	
15.99.05 Concrete Divider Wall (TBM Shft)			351,045	52,176	423,178	0	826,399	
15.99.06 Conc Platforms @ 9 Levels (TBM)			15,768	1,893	18,233	0	35,893	
TOTAL Associated General Items			5,023,988	239,683	9,164,762	0	14,428,433	

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			16,250,517	4,243,115	9,460,498	1,611,810	31,565,940	
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08 Final Report Documentation			3,700,675	0	0	0	3,700,675	
TOTAL General Design Memorandum			3,700,675	0	0	0	3,700,675	
TOTAL PLANNING, ENGINEERING AND DESIGN			3,700,675	0	0	0	3,700,675	
31 CONSTRUCTION MAMNAGEMENT								
31.23 Construction Contracts								
31.23.11 Supervision and Administration			1,990,600	0	0	0	1,990,600	
TOTAL Construction Contracts			1,990,600	0	0	0	1,990,600	
TOTAL CONSTRUCTION MAMNAGEMENT			1,990,600	0	0	0	1,990,600	
TOTAL Tunnel Shaft #2C Project Cost	1.00	EA	21,946,737	4,243,115	9,460,498	1,611,810	37,262,160	37262160
OVERHEAD							4,419,232	
SUBTOTAL							41,681,391	
PROFIT							3,598,517	
SUBTOTAL							45,279,908	
BOND							228,447	
TOTAL INCL INDIRECTS							45,508,355	
CONTING							8,995,272	
TOTAL INCL OWNER COSTS							54,503,627	

ATTACHMENT M-CACES

DA - 7

WORKSHAFT #3

Fri 11 Aug 1995
Eff. Date 06/08/95

U.S. Army Corps of Engineers
PROJECT SHFT03: Tunnel Shaft #3 Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:25:31

TITLE PAGE 1

Tunnel Shaft #3 Project Cost
Passaic River
Flood Damage Reduction Project
Main Tunnel
Exit Shaft #3

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/08/95
Effective Date of Pricing: 06/08/95
Est Construction Time: 252 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Fri 11 Aug 1995
Eff. Date 06/08/95
TABLE OF CONTENTS

U.S. Army Corps of Engineers
PROJECT SHFT03: Tunnel Shaft #3 Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:25:31

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	3
PROJECT DIRECT SUMMARY - ELEMENT.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

FINAL ESTIMATE

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00 EA	41,797	6,270	48,067	48066.55	
TOTAL General Design Memorandum		1.00 EA	41,797	6,270	48,067	48066.55	
TOTAL LANDS AND DAMAGES		1.00 EA	41,797	6,270	48,067	48066.55	
15 FLOODWAY CONTROL-DIVERSION STRUC							
15.01 Mob, Demob & Preparatory Work							
			219,501	54,875	274,376		
TOTAL Mob, Demob & Preparatory Work			219,501	54,875	274,376		
15.10 Earthwork for Structures							
15.10.02 Site Work							
			2,737,759	585,000	3,322,759		
TOTAL Earthwork for Structures			2,737,759	585,000	3,322,759		
15.12 Seepage Control							
15.12.02 Site Work							
			922,317	200,000	1,122,317		
TOTAL Seepage Control			922,317	200,000	1,122,317		
15.25 Embedded Metal Work							
15.25.05 Metals							
			185,632	30,000	215,632		
TOTAL Embedded Metal Work			185,632	30,000	215,632		
15.99 Associated General Items							
15.99.01 Concrete above ground							
			28,478	5,000	33,478		
15.99.02 Site Work							
			8,558	1,500	10,058		
15.99.03 Concrete below ground							
			179,845	40,000	219,845		
TOTAL Associated General Items			216,881	46,500	263,381		
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			4,282,090	916,375	5,198,465		

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design memorandum						
30.20.08	Final Report Documentation		633,883	115,959	749,842		
TOTAL General Design memorandum			1.00	EA	633,883	115,959	749,842 749842.00
TOTAL PLANNING, ENGINEERING AND DESIGN			1.00	EA	633,883	115,959	749,842 749842.00
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration		214,100	53,525	267,625		
TOTAL Construction Contracts			1.00	EA	214,100	53,525	267,625 267625.00
TOTAL CONSTRUCTION MANAGEMENT			1.00	EA	214,100	53,525	267,625 267625.00
TOTAL Tunnel Shaft #3 Project Cost			1.00	EA	5,171,870	1,092,129	6,263,998 6263998 1,2,3,

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03 Real Estate Analysis Documents	1.00	EA	41,797	0	0	0	41,797	41797.00
TOTAL General Design Memorandum	1.00	EA	41,797	0	0	0	41,797	41797.00
TOTAL LANDS AND DAMAGES	1.00	EA	41,797	0	0	0	41,797	41797.00

15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01 Mob, Demob & Preparatory Work			184,250	18,425	15,201	1,625	219,501	
TOTAL Mob, Demob & Preparatory Work			184,250	18,425	15,201	1,625	219,501	
15.10 Earthwork for Structures								
15.10.02 Site Work			2,298,089	229,809	189,592	20,269	2,737,759	
TOTAL Earthwork for Structures			2,298,089	229,809	189,592	20,269	2,737,759	
15.12 Seepage Control								
15.12.02 Site Work			783,606	70,525	59,789	8,397	922,317	
TOTAL Seepage Control			783,606	70,525	59,789	8,397	922,317	
15.25 Embedded Metal Work								
15.25.05 Metals			157,163	14,145	11,991	2,333	185,632	
TOTAL Embedded Metal Work			157,163	14,145	11,991	2,333	185,632	
15.99 Associated General Items								
15.99.01 Concrete above ground			24,117	2,171	1,840	350	28,478	
15.99.02 Site Work			7,229	651	552	126	8,558	
15.99.03 Concrete below ground			152,308	13,708	11,621	2,208	179,845	
TOTAL Associated General Items			183,655	16,529	14,013	2,684	216,881	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			3,606,762	349,432	290,586	35,309	4,282,090	

Fri 11 Aug 1995
 Eff. Date 06/08/95

U.S. Army Corps of Engineers
 PROJECT SHFT03: Tunnel Shaft #3 Project Cost - Passaic River
 FINAL ESTIMATE

TIME 08:25:31

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design memorandum							
30.20.08			633,883	0	0	0	633,883	

TOTAL	1.00	EA	633,883	0	0	0	633,883	633883.00

TOTAL	1.00	EA	633,883	0	0	0	633,883	633883.00

31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11			214,100	0	0	0	214,100	

TOTAL	1.00	EA	214,100	0	0	0	214,100	214100.00

TOTAL	1.00	EA	214,100	0	0	0	214,100	214100.00

TOTAL	1.00	EA	4,496,542	349,432	290,586	35,309	5,171,870	51718'

CONTING							1,092,129	

TOTAL							6,263,998	

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:25:31

Eff. Date 06/08/95

PROJECT SHFT03: Tunnel Shaft #3 Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 5

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03 Real Estate Analysis Documents	1.00	EA	41,797	0	0	0	41,797	41797.00
TOTAL General Design Memorandum	1.00	EA	41,797	0	0	0	41,797	41797.00
TOTAL LANDS AND DAMAGES	1.00	EA	41,797	0	0	0	41,797	41797.00

15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01 Mob, Demob & Preparatory Work			92,125	92,125	0	0	184,250	
TOTAL Mob, Demob & Preparatory Work			92,125	92,125	0	0	184,250	
15.10 Earthwork for Structures								
15.10.02 Site Work			1,792,834	474,738	30,517	0	2,298,089	
TOTAL Earthwork for Structures			1,792,834	474,738	30,517	0	2,298,089	
15.12 Seepage Control								
15.12.02 Site Work			0	0	783,606	0	783,606	
TOTAL Seepage Control			0	0	783,606	0	783,606	
15.25 Embedded Metal Work								
15.25.05 Metals			28,575	28,575	100,013	0	157,163	
TOTAL Embedded Metal Work			28,575	28,575	100,013	0	157,163	
15.99 Associated General Items								
15.99.01 Concrete above ground			13,060	810	10,247	0	24,117	
15.99.02 Site Work			3,898	477	2,855	0	7,229	
15.99.03 Concrete below ground			96,234	17,079	38,995	0	152,308	
TOTAL Associated General Items			113,192	18,366	52,097	0	183,655	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			2,026,726	613,803	966,232	0	3,606,762	

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design memorandum							
30.20.08			633,883	0	0	0	633,883	

TOTAL	General Design memorandum	1.00 EA	633,883	0	0	0	633,883	633883.00

TOTAL	PLANNING, ENGINEERING AND DESIGN	1.00 EA	633,883	0	0	0	633,883	633883.00

31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11			214,100	0	0	0	214,100	

TOTAL	Construction Contracts	1.00 EA	214,100	0	0	0	214,100	214100.00

TOTAL	CONSTRUCTION MANAGEMENT	1.00 EA	214,100	0	0	0	214,100	214100.00

TOTAL	Tunnel Shaft #3 Project Cost	1.00 EA	2,916,506	613,803	966,232	0	4,496,542	44965

OVERHEAD							349,432	

SUBTOTAL							4,845,974	
PROFIT							290,586	

SUBTOTAL							5,136,560	
BOND							35,309	

TOTAL INCL INDIRECTS							5,171,870	
CONTING							1,092,129	

TOTAL INCL OWNER COSTS							6,263,998	

ATTACHMENT M-CACES

DA - 8

WORKSHAFT #4

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT SHFT04: Tunnel Shaft #4 Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:37:54

TITLE PAGE 1

Tunnel Shaft #4 Project Cost
Passaic River
Flood Damage Reduction Project
Spur Tunnel
Workshaft #4

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/09/95
Effective Date of Pricing: 06/09/95
Est Construction Time: 252 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Fri 11 Aug 1995
Eff. Date 06/09/95
TABLE OF CONTENTS

U.S. Army Corps of Engineers
PROJECT SHFT04: Tunnel Shaft #4 Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:37:54

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	3
PROJECT DIRECT SUMMARY - ELEMENT.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

01	LANDS AND DAMAGES						
01.20	General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00 EA	4,121	618	4,739	4739.15	
	TOTAL General Design Memorandum	1.00 EA	4,121	618	4,739	4739.15	
	TOTAL LANDS AND DAMAGES	1.00 EA	4,121	618	4,739	4739.15	

15	FLOODWAY CONTROL-DIVERSION STRUC						
15.01	Mob, Demob & Preparatory Work		107,319	25,000	132,319		
	TOTAL Mob, Demob & Preparatory Work		107,319	25,000	132,319		

15.10	Earthwork for Structures						
15.10.02	Site Work		1,332,476	285,000	1,617,476		
	TOTAL Earthwork for Structures		1,332,476	285,000	1,617,476		

15.12	Seepage Control						
15.12.02	Site Work		114,751	25,000	139,751		
	TOTAL Seepage Control		114,751	25,000	139,751		

15.25	Embedded Metal Work						
15.25.05	Metals		32,750	5,000	37,750		
	TOTAL Embedded Metal Work		32,750	5,000	37,750		

15.99	Associated General Items						
15.99.01	Concrete above ground		15,526	2,500	18,026		
15.99.02	Site Work		8,558	1,500	10,058		
15.99.03	Concrete below ground		423,144	90,000	513,144		
	TOTAL Associated General Items		447,228	94,000	541,228		
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC		2,034,523	434,000	2,468,523		

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES	

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.03	Final Report Documentation		191,085	27,579	218,664			
TOTAL General Design Memorandum			1.00 EA	191,085	27,579	218,664	218664.00	
TOTAL PLANNING, ENGINEERING AND DESIGN			1.00 EA	191,085	27,579	218,664	218664.00	
31	CONSTRUCTION MANAGEMENT							
31.20	Construction Contracts							
31.20.11	Supervision and Administration		101,750	25,438	127,188			
TOTAL Construction Contracts			1.00 EA	101,750	25,438	127,188	127188.00	
TOTAL CONSTRUCTION MANAGEMENT			1.00 EA	101,750	25,438	127,188	127188.00	
TOTAL Tunnel Shaft #4 Project Cost			1.00 EA	2,331,479	487,635	2,819,114	2819114 1,2,3	

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST UNIT COST

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00 EA	4,121	0	0	0	4,121 4121.00

	TOTAL General Design Memorandum	1.00 EA	4,121	0	0	0	4,121 4121.00

	TOTAL LANDS AND DAMAGES	1.00 EA	4,121	0	0	0	4,121 4121.00

15 FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work		90,000	9,000	7,425	894	107,319

	TOTAL Mob, Demob & Preparatory Work		90,000	9,000	7,425	894	107,319

15.10 Earthwork for Structures							
15.10.02	Site Work		1,117,442	111,744	92,189	11,101	1,332,476

	TOTAL Earthwork for Structures		1,117,442	111,744	92,189	11,101	1,332,476

15.12 Seepage Control							
15.12.02	Site Work		96,990	8,729	7,400	1,631	114,751

	TOTAL Seepage Control		96,990	8,729	7,400	1,631	114,751

15.25 Embedded Metal Work							
15.25.05	Metals		27,665	2,490	2,111	484	32,750

	TOTAL Embedded Metal Work		27,665	2,490	2,111	484	32,750

15.99 Associated General Items							
15.99.01	Concrete above ground		13,165	1,185	1,004	171	15,526
15.99.02	Site Work		7,229	651	552	126	8,558
15.99.03	Concrete below ground		358,807	32,293	27,377	4,667	423,144

	TOTAL Associated General Items		379,202	34,128	28,933	4,965	447,228

	TOTAL FLOODWAY CONTROL-DIVERSION STRUC		1,711,299	166,091	138,058	19,075	2,034,523

Fri 11 Aug 1995
 Eff. Date 06/09/95

U.S. Army Corps of Engineers
 PROJECT SHFT04: Tunnel Shaft #4 Project Cost - Passaic River

TIME 08:37:54

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST UNIT COST

30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.03			191,085	0	0	0	191,085

TOTAL	1.00	EA	191,085	0	0	0	191,085 191085.00

TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	191,085	0	0	0	191,085 191085.00

31 CONSTRUCTION MANAGEMENT							
31.20 Construction Contracts							
31.20.11			101,750	0	0	0	101,750

TOTAL	1.00	EA	101,750	0	0	0	101,750 101750.00

TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	101,750	0	0	0	101,750 101750.00

TOTAL Tunnel Shaft #4 Project Cost	1.00	EA	2,008,255	166,091	138,058	19,075	2,331,479 233147

CONTING							487,635

TOTAL INCL OWNER COSTS							2,819,114

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03 Real Estate Analysis Documents	1.00	EA	4,121	0	0	0	4,121	4121.00
TOTAL General Design Memorandum	1.00	EA	4,121	0	0	0	4,121	4121.00
TOTAL LANDS AND DAMAGES	1.00	EA	4,121	0	0	0	4,121	4121.00

15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01 Mob, Demob & Preparatory Work			45,000	45,000	0	0	90,000	
TOTAL Mob, Demob & Preparatory Work			45,000	45,000	0	0	90,000	

15.10 Earthwork for Structures								
15.10.02 Site Work			849,062	235,292	33,088	0	1,117,442	
TOTAL Earthwork for Structures			849,062	235,292	33,088	0	1,117,442	

15.12 Seepage Control								
15.12.02 Site Work			0	0	96,990	0	96,990	
TOTAL Seepage Control			0	0	96,990	0	96,990	

15.25 Embedded Metal Work								
15.25.05 Metals			5,030	5,030	17,605	0	27,665	
TOTAL Embedded Metal Work			5,030	5,030	17,605	0	27,665	

15.99 Associated General Items								
15.99.01 Concrete above ground			8,173	277	4,715	0	13,165	
15.99.02 Site Work			3,898	477	2,855	0	7,229	
15.99.03 Concrete below ground			170,342	36,830	151,636	0	358,807	
TOTAL Associated General Items			182,412	37,584	159,205	0	379,202	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			1,081,504	322,906	306,888	0	1,711,299	

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.03			191,085	0	0	0	191,085	

	TOTAL	1.00 EA	191,085	0	0	0	191,085	191085.00

	TOTAL	1.00 EA	191,085	0	0	0	191,085	191085.00

31	CONSTRUCTION MANAGEMENT							
31.20	Construction Contracts							
31.20.11			101,750	0	0	0	101,750	

	TOTAL	1.00 EA	101,750	0	0	0	101,750	101750.00

	TOTAL	1.00 EA	101,750	0	0	0	101,750	101750.00

	TOTAL	1.00 EA	1,378,460	322,906	306,888	0	2,008,255	2008255

OVERHEAD							166,091	

SUBTOTAL							2,174,346	
PROFIT							138,058	

SUBTOTAL							2,312,404	
BOND							19,075	

TOTAL INCL INDIRECTS							2,331,479	
CONTING							487,635	

TOTAL INCL OWNER COSTS							2,819,114	

ATTACHMENT M-CACES

DA - 9

POMPTON (MAIN) INLET

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT MAININ: Pompton Inlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:40:32
TITLE PAGE 1

Pompton Inlet Project Cost
Passaic River
Flood Damage Reduction Project
Main Tunnel
Pompton Inlet

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Tram N. Pollock, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/09/95
Effective Date of Pricing: 06/09/95
Est Construction Time: 504 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

MCACES GOLD EDITION
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - System.....	1
PROJECT INDIRECT SUMMARY - System.....	3
PROJECT DIRECT SUMMARY - System.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

General - This cost estimate was prepared in accordance with ER 1110-2-1302, "Civil Works Cost Engineering". The cost account numbers used in this estimate are in accordance with the Work Breakdown Structures established in the MCACES Gold. The price level base is October 1994.

Scope of Work - The first stage of the project will be to place the coffercells and inner berm. We assumed suitable material could be found on site. A structural slurry wall will be constructed after coffercells and inner are in place. Site excavation using conventional equipment will begin after slurry is completed. Rock excavation will be ripping the first 5', then drill and blast method from EL. 115 to EL. 8.97. A dragline will be used to excavate the vent shaft.

After excavation is completed, the structural elements of the inlet will be constructed. Several items will require unique construction techniques that cannot be fully considered until further design is accomplished. These items have a higher contingency to allow for special construction procedures.

Fri 11 Aug 1995
Eff. Date 06/09/95
CONTINGENCIES

U.S. Army Corps of Engineers
PROJECT MAININ: Pompton Inlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:40:32

TITLE PAGE 3

-
1. Contractor Location Unknown
 2. Uncertainty in size and type of equipment contractor will use
 3. Scope of Work may change
 4. Standard Design
 5. Disposal Areas have not been chosen
 6. Production rate may change
 7. Low level of design
 8. Quantities may change
 9. Removal method uncertain
 10. Site material may not be suitable
 11. Construction method uncertain

FINAL ESTIMATE

** PROJECT OWNER SUMMARY - System **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST	NOTES

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00 EA	14,354	2,153	16,507	16507.10	
TOTAL General Design Memorandum			1.00 EA	14,354	2,153	16,507	16507.10
TOTAL LANDS AND DAMAGES			1.00 EA	14,354	2,153	16,507	16507.10
15 FLOODWAY CONTROL-DIVERSION STRUC							
15.00 Floodway Control-Diversion Struc							
15.00.01	Mob, Demob & Preparatory Work		270,762	45,000	315,762		1,2
15.00.03	Care and Diversion of Water		5,169,583	904,677	6,074,260		3,8
15.00.10	Earthwork for Structures		6,798,460	1,359,692	8,158,152		2,8,9
15.00.11	Foundation Work		1,943,075	340,038	2,283,114		6,8
15.00.12	Seepage Control		6,803,765	1,544,924	8,348,689		
15.00.25	Embedded Metal Work		45,620	6,843	52,463		7
15.00.41	Gates, Stop Logs-Associated Eqpt		4,629,926	925,985	5,555,912		7,8
15.00.53	Overflow Structure		3,019,039	628,746	3,647,785		
15.00.54	Stilling Basin		6,654,329	1,317,383	7,971,712		
TOTAL Floodway Control-Diversion Struc			35,334,559	7,073,289	42,407,848		
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			1.00 EA	35,334,559	7,073,289	42,407,848	42407848
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08	Final Report Documentation		5,174,503	946,799	6,121,302		
TOTAL General Design Memorandum			1.00 EA	5,174,503	946,799	6,121,302	6121302
TOTAL PLANNING, ENGINEERING AND DESIGN			1.00 EA	5,174,503	946,799	6,121,302	6121302
31 CONSTRUCTION MANAGEMENT							
31.23 Construction Contracts							
31.23.11	Supervision and Administration		1,766,730	441,683	2,208,413		
TOTAL Construction Contracts			1.00 EA	1,766,730	441,683	2,208,413	2208413

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT MAININ: Pompton Inlet Project Cost - Passaic River

TIME 08:40:32

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - System **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST	NOTL
TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	1,766,730	441,683	2,208,413	2208413	
TOTAL Pompton Inlet Project Cost	1.00	EA	42,290,146	8,463,924	50,754,070	50754070	

** PROJECT INDIRECT SUMMARY - System **

		QUANTITY	UOM	DIRECT	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES										
01.20 General Design Memorandu										
01.20.03	Real Estate Analysis	1.00	EA	14,354	0	0	0	0	14,354	14354.00

	TOTAL General Design Memora	1.00	EA	14,354	0	0	0	0	14,354	14354.00

	TOTAL LANDS AND DAMAGES	1.00	EA	14,354	0	0	0	0	14,354	14354.00

15 FLOODWAY CONTROL-DIVERSION										
15.00 Floodway Control-Diversi										
15.00.01	Mob, Demob & Preparat			228,666	16,007	6,860	17,150	2,080	270,762	
15.00.03	Care and Diversion of			4,365,855	305,610	130,976	327,439	39,704	5,169,583	
15.00.10	Earthwork for Structu			5,741,486	401,904	172,245	430,611	52,214	6,798,460	
15.00.11	Foundation Work			1,640,980	114,869	49,229	123,074	14,923	1,943,075	
15.00.12	Seepage Control			5,745,966	402,218	172,379	430,947	52,255	6,803,765	
15.00.25	Embedded Metal Work			38,528	2,697	1,156	2,890	350	45,620	
15.00.41	Gates, Stop Logs-Asso			3,910,100	273,707	117,303	293,257	35,559	4,629,926	
15.00.53	Overflow Structure			2,549,661	178,476	76,490	191,225	23,187	3,019,039	
15.00.54	Stilling Basin			5,619,763	393,383	168,593	421,482	51,107	6,654,329	

	TOTAL Floodway Control-Dive			29,841,005	2,088,870	895,230	2,238,075	271,379	35,334,559	

	TOTAL FLOODWAY CONTROL-DIVE	1.00	EA	29,841,005	2,088,870	895,230	2,238,075	271,379	35,334,559	35334559

30 PLANNING, ENGINEERING AND D										
30.20 General Design Memorandu										
30.20.08	Final Report Document			5,174,503	0	0	0	0	5,174,503	

	TOTAL General Design Memora	1.00	EA	5,174,503	0	0	0	0	5,174,503	5174503

	TOTAL PLANNING, ENGINEERING	1.00	EA	5,174,503	0	0	0	0	5,174,503	5174503

31 CONSTRUCTION MANAGEMENT										
31.23 Construction Contracts										
31.23.11	Supervision and Admin			1,766,730	0	0	0	0	1,766,730	

	TOTAL Construction Contract	1.00	EA	1,766,730	0	0	0	0	1,766,730	1766730

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT MAININ: Pompton Inlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:40:32

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - System **

	QUANTITY	UOM	DIRECT	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
TOTAL CONSTRUCTION MANAGEME	1.00	EA	1,766,730	0	0	0	0	1,766,730	1766730
TOTAL Pompton Inlet Project	1.00	EA	36,796,592	2,088,870	895,230	2,238,075	271,379	42,290,146	42290146
CONTINGENCY								8,463,924	
TOTAL INCL OWNER COSTS								50,754,070	

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - System **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00 EA	14,354	0	0	0	14,354	14354.00
TOTAL General Design Memorandum		1.00 EA	14,354	0	0	0	14,354	14354.00
TOTAL LANDS AND DAMAGES		1.00 EA	14,354	0	0	0	14,354	14354.00
15 FLOODWAY CONTROL-DIVERSION STRUC								
15.00 Floodway Control-Diversion Struc								
15.00.01	Mob, Demob & Preparatory Work		104,775	123,891	0	0	228,666	
15.00.03	Care and Diversion of Water		1332032	1039559	1994263	0	4,365,855	
15.00.10	Earthwork for Structures		2501756	2164388	1075343	0	5,741,486	
15.00.11	Foundation Work		502,762	156,993	981,225	0	1,640,980	
15.00.12	Seepage Control		1006769	271,941	4467256	0	5,745,966	
15.00.25	Embedded Metal Work		0	0	38,528	0	38,528	
15.00.41	Gates, Stop Logs-Associated Eqpt		1051921	929	2857250	0	3,910,100	
15.00.53	Overflow Structure		805,229	67,234	1677198	0	2,549,661	
15.00.54	Stilling Basin		1439622	214,057	3966084	0	5,619,763	
TOTAL Floodway Control-Diversion Struc			8744865	4038994	17057146	0	29,841,005	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC		1.00 EA	8744865	4038994	17057146	0	29,841,005	29841005
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation		5174503	0	0	0	5,174,503	
TOTAL General Design Memorandum		1.00 EA	5174503	0	0	0	5,174,503	5174503
TOTAL PLANNING, ENGINEERING AND DESIGN		1.00 EA	5174503	0	0	0	5,174,503	5174503
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11	Supervision and Administration		1766730	0	0	0	1,766,730	
TOTAL Construction Contracts		1.00 EA	1766730	0	0	0	1,766,730	1766730

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT MAININ: Pompton Inlet Project Cost - Passaic River

TIME 08:40:32

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT DIRECT SUMMARY - System **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COS.
TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	1766730	0	0	0	1,766,730	1766730
TOTAL Pompton Inlet Project Cost	1.00	EA	15700452	4038994	17057146	0	36,796,592	36796592
OVERHEAD							2,088,870	
SUBTOTAL							38,885,462	
HOME OFC							895,230	
SUBTOTAL							39,780,692	
PROFIT							2,238,075	
SUBTOTAL							42,018,767	
BOND							271,379	
TOTAL INCL INDIRECTS							42,290,146	
CONTINGENCY							8,463,924	
TOTAL INCL OWNER COSTS							50,754,070	

ATTACHMENT M-CACES

DA - 10

PASSAIC (SPUR) INLET

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT SPURIN: Two Bridges Inlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:45:10
TITLE PAGE 1

Two Bridges Inlet Project Cost
Passaic River
Flood Damage Reduction Project
Spur Tunnel
Two Bridges Inlet

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Johnny E. Parham, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-C

Preparation Date: 06/09/95
Effective Date of Pricing: 06/09/95
Est Construction Time: 504 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Fri 11 Aug 1995
Eff. Date 06/09/95
TABLE OF CONTENTS

U.S. Army Corps of Engineers
PROJECT SPURIN: Two Bridges Inlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:45:10
CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - System.....	1
PROJECT INDIRECT SUMMARY - System.....	3
PROJECT DIRECT SUMMARY - System.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

The first stage of the project will be to place the below grade portion of the slurry wall in the berm. The berm will then be placed. We assumed suitable material could be found onsite. After the berm fill is in place the contractor will excavate for the above grade portion of the slurry wall and place it.

Once the berm is in place the site excavation will begin. First, excavation to the elevation of the top of the structural slurry wall will be accomplished. The structural slurry wall will then be placed and excavation will continue to top of rock. We assumed material in the shaft will be removed by placing a loader in the shaft to load a dragline to pull material out. Rock excavation will be by the drill and blast method.

After excavation is complete, the structural elements of the inlet will be constructed. Several items will require unique construction techniques that cannot be fully considered until further design is accomplished. These items have a higher contingency to allow for special construction procedures. Examples of these items are the shaft liners, the walls within the shaft, and even excavation in the shafts.

Fri 11 Aug 1995
Eff. Date 06/09/95
CONTINGENCIES

U.S. Army Corps of Engineers
PROJECT SPURIN: Two Bridges Inlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 08:45:10
TITLE PAGE 3

-
1. Contractor Location Unknown
 2. Uncertainty in type and size of equipment contractor will use
 3. Scope of Work may change
 4. Standard Design
 5. Disposal Areas have not been chosen
 6. Production rate may change
 7. Low level of design
 8. Quantities may change
 9. Removal method uncertain
 10. Site material may not be suitable
 11. Construction method uncertain

** PROJECT OWNER SUMMARY - System **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST	NOTES	

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00	EA	988,012	148,202	1,136,214	1136214	
TOTAL General Design Memorandum			1.00	EA	988,012	148,202	1,136,214	1136214
TOTAL LANDS AND DAMAGES			1.00	EA	988,012	148,202	1,136,214	1136214
15 FLOODWAY CONTROL-DIVERSION STRUC								
15.00 Floodway Control-Diversion Struc								
15.00.01	Mob, Demob & Preparatory Work			230,149	40,000	270,149	1,2	
15.00.03	Care and Diversion of Water			2,614,814	90,600	2,705,414		
15.00.10	Earthwork for Structures			1,625,232	169,400	1,794,632	2,8,9	
15.00.11	Foundation Work			2,233,780	300,000	2,533,780	6,8	
15.00.12	Seepage Control			3,782,861	838,700	4,621,561		
15.00.41	Gates, Stop Logs-Associated Eqpt			2,584,127	428,100	3,012,227		
15.00.53	Overflow Structure			1,113,637	178,100	1,291,737		
15.00.54	Stilling Basin			1,988,209	396,900	2,385,109		
TOTAL Floodway Control-Diversion Struc				16,172,809	2,441,800	18,614,609		
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			1.00	EA	16,172,809	2,441,800	18,614,609	18614609
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation			1,446,873	209,481	1,656,354		
TOTAL General Design Memorandum			1.00	EA	1,446,873	209,481	1,656,354	1656354
TOTAL PLANNING, ENGINEERING AND DESIGN			1.00	EA	1,446,873	209,481	1,656,354	1656354
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11	Supervision and Administration			808,640	202,160	1,010,800		
TOTAL Construction Contracts			1.00	EA	808,640	202,160	1,010,800	1010800
TOTAL CONSTRUCTION MANAGEMENT			1.00	EA	808,640	202,160	1,010,800	1010800

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT SPURIN: Two Bridges Inlet Project Cost - Passaic River

TIME 08:45:10

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - System **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST	NOTES
TOTAL Two Bridges Inlet Project Cost	1.00	EA	19,416,334	3,001,643	22,417,977	22417977	

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - System **

		QUANTITY	UOM	DIRECT	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES										
01.20 General Design Memorandu										
01.20.03	Real Estate Analysis	1.00	EA	988,012	0	0	0	0	988,012	988012.00

	TOTAL General Design Memora	1.00	EA	988,012	0	0	0	0	988,012	988012.00

	TOTAL LANDS AND DAMAGES	1.00	EA	988,012	0	0	0	0	988,012	988012.00

15 FLOODWAY CONTROL-DIVERSION										
15.00 Floodway Control-Diversi										
15.00.01	Mob, Demob & Preparat			194,251	11,655	7,770	14,569	1,904	230,149	
15.00.03	Care and Diversion of			2,206,963	132,418	88,279	165,522	21,632	2,614,814	
15.00.10	Earthwork for Structu			1,371,733	82,304	54,869	102,880	13,445	1,625,232	
15.00.11	Foundation Work			1,885,362	113,122	75,414	141,402	18,480	2,233,780	
15.00.12	Seepage Control			3,192,822	191,569	127,713	239,462	31,295	3,782,861	
15.00.41	Gates, Stop Logs-Asso			2,181,063	130,864	87,243	163,580	21,378	2,584,127	
15.00.53	Overflow Structure			939,935	56,396	37,597	70,495	9,213	1,113,637	
15.00.54	Stilling Basin			1,678,094	100,686	67,124	125,857	16,448	1,988,209	

	TOTAL Floodway Control-Dive			13,650,224	819,013	546,009	1,023,767	133,796	16,172,809	

	TOTAL FLOODWAY CONTROL-DIVE	1.00	EA	13,650,224	819,013	546,009	1,023,767	133,796	16,172,809	16172809

30 PLANNING, ENGINEERING AND D										
30.20 General Design Memorandu										
30.20.08	Final Report Document			1,446,873	0	0	0	0	1,446,873	

	TOTAL General Design Memora	1.00	EA	1,446,873	0	0	0	0	1,446,873	1446873

	TOTAL PLANNING, ENGINEERING	1.00	EA	1,446,873	0	0	0	0	1,446,873	1446873

31 CONSTRUCTION MANAGEMENT										
31.23 Construction Contracts										
31.23.11	Supervision and Admin			808,640	0	0	0	0	808,640	

	TOTAL Construction Contract	1.00	EA	808,640	0	0	0	0	808,640	808640.00

	TOTAL CONSTRUCTION MANAGEME	1.00	EA	808,640	0	0	0	0	808,640	808640.00

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 08:45:10

Eff. Date 06/09/95

PROJECT SPURIN: Two Bridges Inlet Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - System **

	QUANTITY	UOM	DIRECT	OVERHEAD	HOME OPC	PROFIT	BOND	TOTAL COST	UNIT COST
TOTAL Two Bridges Inlet Pro	1.00	EA	16,893,749	819,013	546,009	1,023,767	133,796	19,416,334	19416334
CONTINGENCY								3,001,643	
TOTAL INCL OWNER COSTS								22,417,977	

** PROJECT DIRECT SUMMARY - System **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	Supplies	TOTAL COST	UNIT COST

01	LANDS AND DAMAGES								

01.20	General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00	EA	988,012	0	0	0	988,012	988012.00
TOTAL General Design Memorandum		1.00	EA	988,012	0	0	0	988,012	988012.00
TOTAL LANDS AND DAMAGES		1.00	EA	988,012	0	0	0	988,012	988012.00

15	FLOODWAY CONTROL-DIVERSION STRUC								

15.00	Floodway Control-Diversion Struc								
15.00.01	Mob, Demob & Preparatory Work			85,527	108,724	0	0	194,251	
15.00.03	Care and Diversion of Water			434,732	386,731	1385500	0	2,206,963	
15.00.10	Earthwork for Structures			175,566	116,234	1079934	0	1,371,733	
15.00.11	Foundation Work			547,240	233,428	1104694	0	1,885,362	
15.00.12	Seepage Control			769,378	161,623	2261820	0	3,192,822	
15.00.41	Gates, Stop Logs-Associated Eqpt			602,722	929	1577412	0	2,181,063	
15.00.53	Overflow Structure			279,506	21,574	631,721	7,135	939,935	
15.00.54	Stilling Basin			459,821	93,609	1124664	0	1,678,094	
TOTAL Floodway Control-Diversion Struc				3354492	1122852	9165746	7,135	13,650,224	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC		1.00	EA	3354492	1122852	9165746	7,135	13,650,224	13650224

30	PLANNING, ENGINEERING AND DESIGN								

30.20	General Design Memorandum								
30.20.08	Final Report Documentation			1446873	0	0	0	1,446,873	
TOTAL General Design Memorandum		1.00	EA	1446873	0	0	0	1,446,873	1446873
TOTAL PLANNING, ENGINEERING AND DESIGN		1.00	EA	1446873	0	0	0	1,446,873	1446873

31	CONSTRUCTION MANAGEMENT								

31.23	Construction Contracts								
31.23.11	Supervision and Administration			808,640	0	0	0	808,640	
TOTAL Construction Contracts		1.00	EA	808,640	0	0	0	808,640	808640.00
TOTAL CONSTRUCTION MANAGEMENT		1.00	EA	808,640	0	0	0	808,640	808640.00

Fri 11 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT SPURIN: Two Bridges Inlet Project Cost - Passaic River

TIME 08:45:10

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT DIRECT SUMMARY - System **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	Supplies	TOTAL COST	UNIT COST
TOTAL Two Bridges Inlet Project Cost	1.00	EA	6598017	1122852	9165746	7,135	16,893,749	16893749
OVERHEAD							819,013	
SUBTOTAL							17,712,762	
HOME OFC							546,009	
SUBTOTAL							18,258,771	
PROFIT							1,023,767	
SUBTOTAL							19,282,538	
BOND							133,796	
TOTAL INCL INDIRECTS							19,416,334	
CONTINGENCY							3,001,643	
TOTAL INCL OWNER COSTS							22,417,977	

ATTACHMENT M-CACES

DA - 11

FAIRFIELD ROAD BRIDGE

Wed 09 Aug 1995

U.S. Army Corps of Engineers

TIME 16:00:43

PROJECT FAIRBR: Fairfield Rd Bridge Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

TITLE PAGE 1

Fairfield Rd Bridge Project Cost
Passaic River Flood Damage
Reduction Project
Fairfield Road Bridge

Designed By: Technical Eng Br, CENAN-PR-T
Estimated By: Associated Cost Engineers, Inc.

Prepared By: Bill Porter-Carlton, ACE
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/21/95
Est Construction Time: 378 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

Wed 09 Aug 1995

U.S. Army Corps of Engineers

TIME 16:00:43

PROJECT FAIRBR: Fairfield Rd Bridge Project Cost - Passaic River Flood Damage
FINAL ESTIMATE

TABLE OF CONTENTS

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

NOTES:

DESCRIPTION OF WORK:

Construct a five span, 430' long, 43'-6" wide concrete bridge across the Passaic River channel that will feed into the Spur inlet. The bridge will be in the right of way of Fairfield Road.

The bridge will consist of five simple spans of precast prestressed beams and cast in place slab construction supported by four reinforced, cast in place concrete piers and two reinforced cast in place beam / abutments. The pier and abutment walls are to be founded on pile caps supported by steel "H" piles.

Along one side of the bridge structure, provisions are to be made to carry a 60" steel pipeline on cast in place cradle beams set between two precast prestressed concrete beams and supported by the piers and abutments.

The existing roadway alignment will be adjusted and the elevation raised as required to compensate for the height requirements of the bridge. This will require raising the approach roadways on retained walls of permanent sheet piling on the river side, anchored across the roadway with rods and concrete deadman blocks. The new inclined portion of the roadway will meet the existing roadway approximately 300 ft from the bridge in both directions.

The existing PCECP aquaduct will require a temporary bypass, above ground, in 60" steel pipe. This aquaduct will then require realignment, both vertical and horizontal, for placement on the bridge cradle supports; which will occur after construction of the bridge. The new aquaduct will transverse the bridge piers, and run parallel to the roadway, in a 60", tape coated, concrete lined steel pipe. Transition adaptor fittings will be required at the final "Point of Connections". After completion of bridge construction and pipe line crossing, reconnection of the Aquaduct will be made as required just ahead of the adapter fittings. The aquaduct bypass will then be removed.

A temporary, 24'-0" roadway will be constructed around the construction area parallel to the bridge. The temporary roadway will be removed after completion of the bridge.

The existing Road way will be removed and cut down to an elevation just above mean water table to provide a level working area. The pier and abutment foundations and substructures will be constructed in dewatered sheet pile cofferdams. The cofferdams must be dewatered prior to pile driving and construction of the pier and abutment foundations and substructures. The substructure cap beams and superstructure will be constructed after the sheetpiles are pulled and the area at the piers are backfilled to the proposed bottom of channel elevation.

Approach channel walls will be constructed of permanent sheet piling anchored to concrete deadman blocks.

This estimate excludes the cost of any land purchases and acquisitions.

The Cost Estimate is based on the Items and Unit/ Quantities outlined below:

ITEM	Unit	Quantity
Excavation		
Trench Excavation	CY	1964
Foundation Excavation	CY	4475
Pourous Fill	CY	5959
Course Aggregate Layer	CY	179
Temporary Road		
Subbase (6")	CY	333
Aggregate Base Course (6")	SY	2000
Bit. Stabilized Base Course (4")	TON	450
Bit. Concrete Surface Course (2")	TON	225
Approach Roadways		
Subbase (6")	CY	216
Aggregate Base Course (6")	SY	1293
Bit. Stabilized Base Course (4")	TON	291
Bit. Concrete Surface Course (2")	TON	145
Piling		
Sheetpiles for Cofferdams (Material Reuse Quantity)	SF	8288
Driving Sheet Piles for Cofferdams	SF	23072
Steel H - Piles HP12x84	LF	3240
Anchored Sheetpile Walls	SF	11580
Aqueduct		
60" Dia. Tape Coated Concrete Lined Steel Pipe	LF	1060
Reinforcing Steel in Structures		
Epoxy Coated Reinforcing Steel	Lbs	122678
Reinforcing Steel	Lbs	348378
Concrete in Structures		
Culvert Extensions	CY	36
Pile Caps	CY	717
Concrete in Substructures		
Pier Stems and Abutment Walls	CY	983
Pier Caps	CY	234
Bridge Approach Slab	SY	245
Concrete in Superstructure		
Diaphragms	CY	99
Deck Slab	CY	554
Parapets (0.14 CY/LF)	CY	1385
Precast Concrete Beams AASHTO Type IV (54")	LF	3400
Bridge Accessories		

Wed 09 Aug 1995

U.S. Army Corps of Engineers

TIME 16:00:43

PROJECT FAIRBR: Fairfield Rd Bridge Project Cost - Passaic River Flood Damage

PROJECT NOTES

FINAL ESTIMATE

TITLE PAGE 4

Metal Bridge Rail	LF	860
Beam Guide Rail	LF	400

		QUANTY	UOM	CONTRCT	CONTINGN	TOTAL	UNIT

01	LANDS AND DAMAGES						
01_20	General Design Memorandum						
01_20.03	Real Estate Analysis Documents	1.00	EA	29,300	4,395	33,695	33695
	General Design Memorandum	1.00	EA	29,300	4,395	33,695	33695
	LANDS AND DAMAGES	1.00	EA	29,300	4,395	33,695	33695
08	ROADS, RAILROADS, AND BRIDGES						
08_01	Roads						
08_01.01	Mob, Demob & Preparatory Work	1.00	EA	9,161	1,832	10,993	10993
08_01.05	Bridges, Foundations			1038940	175,538	1214478	
08_01.06	Bridges, Abutments and Piers			257,767	51,553	309,320	
08_01.07	Bridges, Superstructure and Deck			900,963	157,223	1058185	
08_01.08	Bridges, Associated General Item			300,610	60,122	360,732	
08_01.13	Traffic Control - Temporary Road			87,220	17,444	104,664	
08_01.19	Construct Roadbed to Subgrade			155,941	31,188	187,129	
08_01.39	Road Surfacing			34,438	6,888	41,325	
08_01.99	Associated General Items			1085169	180,872	1266041	
	Roads			3870208	682,660	4552868	
	ROADS, RAILROADS, AND BRIDGES	1.00	EA	3870208	682,660	4552868	4552868
30	PLANNING, ENGINEERING AND DESIGN						
30_20	General Design Memorandum						
30_20.08	Final Report Documentation	1.00	EA	353,246	51,076	404,322	404322
	General Design Memorandum	1.00	EA	353,246	51,076	404,322	404322
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	353,246	51,076	404,322	404322
31	CONSTRUCTION MANAGEMENT						
31_20	Construction Contracts						
31_20.11	Supervision and Administration	1.00	EA	193,510	48,378	241,888	241888
	Construction Contracts	1.00	EA	193,510	48,378	241,888	241888
	CONSTRUCTION MANAGEMENT	1.00	EA	193,510	48,378	241,888	241888

Wed 09 Aug 1995

U.S. Army Corps of Engineers

TIME 16:00:43

PROJECT FAIRBR: Fairfield Rd Bridge Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - LEVEL 3 **

	QUANTY	UOM	CONTRCT	CONTINGN	TOTAL	UNIT
Fairfield Rd Bridge Project Cost	87000	LF	4446264	786,509	5232773	60.15

	QUANTY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	UNIT

01 LANDS AND DAMAGES											
01_20 General Design Memorandum											
01_20.03	Real Estate Analysis Documents	1.00	EA	29,300	0	0	0	0	0	29,300	29300

	General Design Memorandum	1.00	EA	29,300	0	0	0	0	0	29,300	29300

	LANDS AND DAMAGES	1.00	EA	29,300	0	0	0	0	0	29,300	29300
08 ROADS, RAILROADS, AND BRIDGES											
08_01 Roads											
08_01.01	Mob, Demob & Preparatory Work	1.00	EA	7,635	458	324	608	45	91	9,161	9160.86
08_01.05	Bridges, Foundations			865,939	51,956	36,716	68,971	5,072	10,287	1038940	
08_01.06	Bridges, Abutments and Piers			214,844	12,891	9,109	17,112	1,258	2,552	257,767	
08_01.07	Bridges, Superstructure and Deck			750,937	45,056	31,840	59,811	4,398	8,920	900,963	
08_01.08	Bridges, Associated General Item			250,553	15,033	10,623	19,956	1,467	2,976	300,610	
08_01.13	Traffic Control - Temporary Road			72,697	4,362	3,082	5,790	426	864	87,220	
08_01.19	Construct Roadbed to Subgrade			129,974	7,798	5,511	10,352	761	1,544	155,941	
08_01.39	Road Surfacing			28,703	1,722	1,217	2,286	168	341	34,438	
08_01.99	Associated General Items			904,470	54,268	38,350	72,040	5,298	10,744	1085169	

	Roads			3225752	193,545	136,772	256,926	18,893	38,319	3870208	

	ROADS, RAILROADS, AND BRIDGES	1.00	EA	3225752	193,545	136,772	256,926	18,893	38,319	3870208	3870208
30 PLANNING, ENGINEERING AND DESIGN											
30_20 General Design Memorandum											
30_20.08	Final Report Documentation	1.00	EA	353,246	0	0	0	0	0	353,246	353246

	General Design Memorandum	1.00	EA	353,246	0	0	0	0	0	353,246	353246

	PLANNING, ENGINEERING AND DESIGN	1.00	EA	353,246	0	0	0	0	0	353,246	353246
31 CONSTRUCTION MANAGEMENT											
31_20 Construction Contracts											
31_20.11	Supervision and Administration	1.00	EA	193,510	0	0	0	0	0	193,510	193510

	Construction Contracts	1.00	EA	193,510	0	0	0	0	0	193,510	193510

	CONSTRUCTION MANAGEMENT	1.00	EA	193,510	0	0	0	0	0	193,510	193510

PROJECT FAIRBR: Fairfield Rd Bridge Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	UNIT
Fairfield Rd Bridge Project Cost	87000	LF	3801808	193,545	136,772	256,926	18,893	38,319	4446264	51.11	
Contingency									786,509	9.04	
TOTAL INCL OWNER COSTS									5232773	60.15	

		QUANTY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	UNIT

01 LANDS AND DAMAGES								
01_20 General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	29,300	0	0	29,300	29300
	General Design Memorandum	1.00	EA	29,300	0	0	29,300	29300
	LANDS AND DAMAGES	1.00	EA	29,300	0	0	29,300	29300
08 ROADS, RAILROADS, AND BRIDGES								
08_01 Roads								
08_01.01	Mob, Demob & Preparatory Work	1.00	EA	2,250	1,173	4,213	7,635	7635.42
08_01.05	Bridges, Foundations			562,989	129,992	172,958	865,939	
08_01.06	Bridges, Abutments and Piers			118,988	3,193	92,663	214,844	
08_01.07	Bridges, Superstructure and Deck			242,895	26,662	481,381	750,937	
08_01.08	Bridges, Associated General Item			110,014	15,584	124,955	250,553	
08_01.13	Traffic Control - Temporary Road			17,237	5,418	50,042	72,697	
08_01.19	Construct Roadbed to Subgrade			24,711	10,182	95,081	129,974	
08_01.39	Road Surfacing			11,590	3,647	13,466	28,703	
08_01.99	Associated General Items			487,743	101,452	315,275	904,470	
	Roads			1,578,417	297,302	1,350,034	3225752	
	ROADS, RAILROADS, AND BRIDGES	1.00	EA	1,578,417	297,302	1,350,034	3225752	3225752
30 PLANNING, ENGINEERING AND DESIGN								
30_20 General Design Memorandum								
30_20.08	Final Report Documentation	1.00	EA	353,246	0	0	353,246	353246
	General Design Memorandum	1.00	EA	353,246	0	0	353,246	353246
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	353,246	0	0	353,246	353246
31 CONSTRUCTION MANAGEMENT								
31_20 Construction Contracts								
31_20.11	Supervision and Administration	1.00	EA	193,510	0	0	193,510	193510
	Construction Contracts	1.00	EA	193,510	0	0	193,510	193510
	CONSTRUCTION MANAGEMENT	1.00	EA	193,510	0	0	193,510	193510

PROJECT FAIRBR: Fairfield Rd Bridge Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	UNIT
Fairfield Rd Bridge Project Cost	87000	LF	2,154,473	297,302	1,350,034	3801808	43.70
Prime Contractor's Field Overhead						193,545	2.22

SUBTOTAL						3995354	45.92
Prime's Home Office Expense						136,772	1.57

SUBTOTAL						4132125	47.50
Prime Contractor's Profit						256,926	2.95

SUBTOTAL						4389051	50.45
Prime Contractor's Bond						18,893	0.22

SUBTOTAL						4407945	50.67
Insurance and Permits						38,319	0.44

TOTAL INCL INDIRECTS						4446264	51.11
Contingency						786,509	9.04

TOTAL INCL OWNER COSTS						5232773	60.15

ATTACHMENT M-CACES

DA - 12

NEWARK BAY OUTLET

Tue 01 Aug 1995
Eff. Date 06/20/95

U.S. Army Corps of Engineers
PROJECT PASOUT: Newark Bay Outlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 10:15:34
TITLE PAGE 1

Newark Bay Outlet Project Cost
Passaic River
Flood Damage Reduction Project
Main Tunnel
Newark Bay Outlet

Designed By: Ken Hull, CEORN-EP-D
Estimated By: Bob Bowles, CEORN-EP-C

Prepared By: Bob Bowles, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/20/95
Effective Date of Pricing: 06/20/95
Est Construction Time: 504 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

MCACES GOLD EDITION
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Tue 01 Aug 1995
Eff. Date 06/20/95
TABLE OF CONTENTS

U.S. Army Corps of Engineers
PROJECT PASOUT: Newark Bay Outlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 10:15:34
CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	3
PROJECT DIRECT SUMMARY - ELEMENT.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

NOTES, QUALIFICATIONS, AND ASSUMPTIONS

SCOPE OF WORK:

The scope of work involves: 1.) Preventing significant water infiltration and contamination into the construction area by construction of a sheet pile coffercell. 2.) The additional control of groundwater and sluffing into the shaft during excavation by ground freezing. 3.) The construction of a concrete-lined shaft through overburden and rock followed by the installation of H-piles around the perimeter of the structure for placement of the outlet structure. 5.) The utilization of rock bolts and mesh in the rock section to stabilize the rock and support the concrete liner. 6.) The separate construction on drydock of a floatable concrete outlet structure. 7.) Excavation of the channel to accommodate floating the outlet structure into its permanent location. Also, additional excavation will be necessary below the lift gates to enable water to flow through them and back into the channel without being restricted. 8.) The towing of the outlet structure to its designated location and finalizing the outlet structure construction with all the related equipment installation. 9.) Place stone fill around the structure as specified and along all slope faces cut by the channel excavation.

Site specific parameters are as follows:

SHAFT	FINISHED DIAMETER	TOTAL DEPTH	OVERBURDEN DEPTH	LINER THICKNESS
Passaic Outlet	varies (45ft&42ft)	396 ft	76 ft	varies (18"&15")

CONSTRUCTION SEQUENCE:

The cost estimate reflects the following construction sequence. For specific quantities, sizes, crew makeups, and output refer to the title level notes:

1. Mobilization of equipment and site preparation, i.e., both at the drydock location and the proposed site for permanent location of the outlet structure.

Concurrent construction to that occurring at the proposed site location of the outlet structure:

1. Construction of the outlet structure in drydock.

Permanent site of Outlet Structure:

2. The installation of an 81.5 ft diameter sheet pile coffercell with WF stiffeners welded to the sheet piling.
3. The placement of sand fill inside the cell to elev. +7.5.
4. The construction of a 49 ft diameter freeze wall.
5. The excavation of soil inside the freeze wall to the top of rock.
6. The drilling and blasting of rock and installation of rock bolts as the excavation proceeds to the designated station of completion of work.
7. The installation of the concrete liner to elev. -26.

-
8. Unfreezing of the groundwall.
 9. Flood the shaft to the waterline.
 10. Remove the sheet pile coffercell.
 11. Dredge the area around the shaft to elev. -30 to enable the tugs to float in the outlet structure and also, to allow for the unrestricted flow of water from the lift gates back into the channel.
 12. Install H-piles to support the outlet structure.
 13. Install and level the flat jack supports system.
 14. Flood the drydock location where the concrete outlet has been constructed and tow it to its permanent location. Sink the structure using water ballast and let it bear on the flat jack supports sitting atop the piling.
 15. Install sheet piling around the perimeter of the structure.
 16. Grout under the base slab with tremie concrete.
 17. Fill ballast compartments with tremie concrete.

Concurrent following steps:

18. Remove bulkhead and styrofoam and place second pour concrete.
19. Place stone fill (riprap) around structure and along the excavated slope faces.
20. Complete the outlet structure including all related equipment installation.

PRIME CONTRACTOR MARK UPS:

The prime contractor's overhead and profit are not detailed in this estimate. An overhead rate of 15% and a profit rate of 10% were used. Consideration was given to a large project requiring construction synchronization. The job requires a number of operations done in a marine environment which increases the risk and slows productivity.

OWNER MARKUPS:

Markups in the following order have been applied to the contract cost (contractors direct cost plus markups):

SALES TAX:

No sales tax has been applied to the material costs at the request of CENAN-PR.

LABOR RATES:

Labor rates used are the 1994 Passaic Basin Labor Rates.

SUBCONTRACTORS:

The prime contractor for the outlet structure is assumed to perform all work except for the steel fabrication, electrical, and the ground freezing operation. Quotes for ground freezing were obtained from Freezwall Inc.. 25% was backed out of his quote to enable M-CACES to add it by its separate subcontractor markup.

ESTIMATE STRUCTURE:

The cost estimate utilizes up to 4 levels of breakdown as follows:

Level 1 of the estimate is "15 - Flood Control and Diversion Structures".

Level 2 of the estimate has no breakdown.

Level 3 of the estimate has been broken down into the areas of mob, demob, and preparatory work, care & diversion of water, earthwork for the structure, foundation work, seepage control, embedded metal work, gates, stoplogs, & associated equipment, overflow (outlet) structure, and associated general items.

Level 4 of the estimate further categorizes the breakdown shown in level 3.

Owner costs are applied at Level 4.

CONTINGENCIES:

The contingencies assigned to each bid item of the estimate were based on the best judgment of the cost engineer with input from the design engineer. Consideration was given to the details of design data available, possibility of quantity variation, and various unknowns associated with the type of work being estimated. They were applied on a case by case basis. To assist in quantifying a number of the uncertainties in the cost estimate, a site visit was made prior to analysis of the job. The contingencies in general range from 10 to 25%.

The following comments are made in regard to the selection of contingency rates applied to all the bid items and referred to by numbers in the contingency notes area of each item:

1. Quantity changes are expected and due to incomplete data.
2. Method of work may differ from that estimated.
3. Actual time of contract is not firm and will affect quantities.
4. Quantities will be determined by actual conditions during the contract.
5. Actual production rates may differ from those estimated.
6. Mode of transportation may vary between contractors.

Tue 01 Aug 1995

U.S. Army Corps of Engineers

TIME 10:15:34

Eff. Date 06/20/95

PROJECT PASOUT: Newark Bay Outlet Project Cost - Passaic River

PROJECT NOTES

FINAL ESTIMATE

TITLE PAGE 5

7. Project scope is not highly defined.

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES						
01.20 General Design Memorandum						
01.20.03 Real Estate Analysis Documents			5,068	760	5,828	
			-----	-----	-----	
TOTAL General Design Memorandum			5,068	760	5,828	
			-----	-----	-----	
TOTAL LANDS AND DAMAGES			5,068	760	5,828	
			-----	-----	-----	
15 FLOODWAY CONTROL-DIVERSION STRUC						
15.01 Mob, Demob & Preparatory Work			1,072,528	214,506	1,287,033	
			-----	-----	-----	
TOTAL Mob, Demob & Preparatory Work			1,072,528	214,506	1,287,033	
			-----	-----	-----	
15.03 Care and Diversion of Water						
15.03.04 Site Work			1,045,040	209,008	1,254,048	
			-----	-----	-----	
TOTAL Care and Diversion of Water			1,045,040	209,008	1,254,048	
			-----	-----	-----	
15.10 Earthwork for Structures						
15.10.02 Site Work			8,339,847	1,345,511	9,685,358	
			-----	-----	-----	
TOTAL Earthwork for Structures			8,339,847	1,345,511	9,685,358	
			-----	-----	-----	
15.11 Foundation Work						
15.11.02 Site Work			1,849,206	369,841	2,219,047	
			-----	-----	-----	
TOTAL Foundation Work			1,849,206	369,841	2,219,047	
			-----	-----	-----	
15.12 Seepage Control						
15.12.02 Site Work			1,274,494	254,899	1,529,393	
			-----	-----	-----	
TOTAL Seepage Control			1,274,494	254,899	1,529,393	
			-----	-----	-----	
15.41 Gates, Stop Logs, & Assoctd Eqpt						
15.41.05 Metals			4,701,007	940,201	5,641,208	

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST
15.41.15 Mechanical			945,879	189,176	1,135,055	
TOTAL Gates, Stop Logs, & Assoc'd Eqpt			5,646,886	1,129,377	6,776,263	
15.53 Overflow (Outlet) Structure						
15.53.03 Concrete			2,244,739	448,948	2,693,687	
15.53.13 Special Construction			465,501	93,100	558,601	
TOTAL Overflow (Outlet) Structure	1.00	EA	2,710,240	542,048	3,252,288	3252288
15.99 Associated General Items						
15.99.02 Site Work			1,958,958	395,556	2,354,514	
15.99.16 Electrical			304,982	60,996	365,979	
TOTAL Associated General Items			2,263,940	456,552	2,720,492	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			24,202,181	4,521,742	28,723,923	
30 PLANNING, ENGINEERING AND DESIGN						
30.20 General Design Memorandum						
30.20.08 Final Report Documentation			2,227,009	321,836	2,548,845	
TOTAL General Design Memorandum			2,227,009	321,836	2,548,845	
TOTAL PLANNING, ENGINEERING AND DESIGN			2,227,009	321,836	2,548,845	
31 CONSTRUCTION MANAGEMENT						
31.23 Construction Contracts						
31.23.11 Supervision and Administration			1,210,111	302,528	1,512,639	
TOTAL Construction Contracts			1,210,111	302,528	1,512,639	
TOTAL CONSTRUCTION MANAGEMENT			1,210,111	302,528	1,512,639	
TOTAL Newark Bay Outlet Project Cost			27,644,369	5,146,866	32,791,235	

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03			5,068	0	0	0	5,068	
	TOTAL General Design Memorandum		5,068	0	0	0	5,068	
	TOTAL LANDS AND DAMAGES		5,068	0	0	0	5,068	

15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work							
			908,250	90,825	68,119	5,334	1,072,528	
	TOTAL Mob, Demob & Preparatory Work		908,250	90,825	68,119	5,334	1,072,528	

15.03	Care and Diversion of Water							
15.03.04			884,972	88,497	66,373	5,197	1,045,040	
	TOTAL Care and Diversion of Water		884,972	88,497	66,373	5,197	1,045,040	

15.10	Earthwork for Structures							
15.10.02			7,062,442	706,244	529,683	41,478	8,339,847	
	TOTAL Earthwork for Structures		7,062,442	706,244	529,683	41,478	8,339,847	

15.11	Foundation Work							
15.11.02			1,565,965	156,597	117,447	9,197	1,849,206	
	TOTAL Foundation Work		1,565,965	156,597	117,447	9,197	1,849,206	

15.12	Seepage Control							
15.12.02			1,079,281	107,928	80,946	6,339	1,274,494	
	TOTAL Seepage Control		1,079,281	107,928	80,946	6,339	1,274,494	

15.41	Gates, Stop Logs, & Assoctd Eqpt							
15.41.05			3,980,959	398,096	298,572	23,380	4,701,007	

FINAL ESTIMATE
 ** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST UNIT COS.	

15.41.15			801,000	80,100	60,075	4,704	945,879	

			4,781,959	478,196	358,647	28,084	5,646,886	
15.53								
15.53.03			1,900,915	190,092	142,569	11,164	2,244,739	
15.53.13			394,201	39,420	29,565	2,315	465,501	

		1.00 EA	2,295,116	229,512	172,134	13,479	2,710,240 2710240	
15.99								
15.99.02			1,658,907	165,891	124,418	9,743	1,958,958	
15.99.16			258,268	25,827	19,370	1,517	304,982	

			1,917,175	191,718	143,788	11,260	2,263,940	

			20,495,160	2,049,516	1,537,137	120,368	24,202,181	
30								
30.20								
30.20.08			2,227,009	0	0	0	2,227,009	

			2,227,009	0	0	0	2,227,009	

			2,227,009	0	0	0	2,227,009	
31								
31.23								
31.23.11			1,210,111	0	0	0	1,210,111	

			1,210,111	0	0	0	1,210,111	

			1,210,111	0	0	0	1,210,111	

			23,937,348	2,049,516	1,537,137	120,368	27,644,369	
CONTING							5,146,866	

							32,791,235	

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents		5,068	0	0	0	5,068	
TOTAL General Design Memorandum			5,068	0	0	0	5,068	
TOTAL LANDS AND DAMAGES			5,068	0	0	0	5,068	

15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work		181,650	726,600	0	0	908,250	
TOTAL Mob, Demob & Preparatory Work			181,650	726,600	0	0	908,250	

15.03	Care and Diversion of Water							
15.03.04	Site Work		383,692	83,294	417,987	0	884,972	
TOTAL Care and Diversion of Water			383,692	83,294	417,987	0	884,972	

15.10	Earthwork for Structures							
15.10.02	Site Work		3,926,514	2,042,006	778,374	315,547	7,062,442	
TOTAL Earthwork for Structures			3,926,514	2,042,006	778,374	315,547	7,062,442	

15.11	Foundation Work							
15.11.02	Site Work		265,015	377,211	923,739	0	1,565,965	
TOTAL Foundation Work			265,015	377,211	923,739	0	1,565,965	

15.12	Seepage Control							
15.12.02	Site Work		298,713	780,568	0	0	1,079,281	
TOTAL Seepage Control			298,713	780,568	0	0	1,079,281	

15.41	Gates, Stop Logs, & Assoctd Eqpt							
15.41.05	Metals		943,962	250,157	2,786,839	0	3,980,959	

** PROJECT DIRECT SUMMARY - ELEMENT **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
15.41.15	Mechanical			260,000	0	541,000	0	801,000	
	TOTAL Gates, Stop Logs, & Assoc'd Eqpt			1,203,962	250,157	3,327,839	0	4,781,959	
15.53	Overflow (Outlet) Structure								
15.53.03	Concrete			1,136,910	93,901	670,105	0	1,900,915	
15.53.13	Special Construction			65,653	33,752	294,795	0	394,201	
	TOTAL Overflow (Outlet) Structure	1.00	EA	1,202,563	127,653	964,900	0	2,295,116	2295116
15.99	Associated General Items								
15.99.02	Site Work			383,216	809,309	323,532	142,850	1,658,907	
15.99.16	Electrical			58,885	775	198,609	0	258,268	
	TOTAL Associated General Items			442,101	810,083	522,141	142,850	1,917,175	
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC			7,904,211	5,197,573	6,934,980	458,397	20,495,160	
30	PLANNING, ENGINEERING AND DESIGN								
30.20	General Design Memorandum								
30.20.08	Final Report Documentation			2,227,009	0	0	0	2,227,009	
	TOTAL General Design Memorandum			2,227,009	0	0	0	2,227,009	
	TOTAL PLANNING, ENGINEERING AND DESIGN			2,227,009	0	0	0	2,227,009	
31	CONSTRUCTION MANAGEMENT								
31.23	Construction Contracts								
31.23.11	Supervision and Administration			1,210,111	0	0	0	1,210,111	
	TOTAL Construction Contracts			1,210,111	0	0	0	1,210,111	
	TOTAL CONSTRUCTION MANAGEMENT			1,210,111	0	0	0	1,210,111	
	TOTAL Newark Bay Outlet Project Cost			11,346,399	5,197,573	6,934,980	458,397	23,937,348	
	OVERHEAD							2,049,516	
	SUBTOTAL							25,986,864	
	PROFIT							1,537,137	

Tue 01 Aug 1995
Eff. Date 06/20/95

U.S. Army Corps of Engineers
PROJECT PASOUT: Newark Bay Outlet Project Cost - Passaic River
FINAL ESTIMATE

TIME 10:15:34

SUMMARY PAGE 7

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
SUBTOTAL							27,524,001	
BOND							120,368	
TOTAL INCL INDIRECTS							27,644,369	
CONTING							5,146,866	
TOTAL INCL OWNER COSTS							32,791,235	

ATTACHMENT M-CACES

DA - 13

PHASE III TUNNEL - Contract E

Tue 01 Aug 1995

U.S. Army Corps of Engineers
PROJECT PIIE2: Phase III Tunnel - Contract E - Spur Tunnel
FINAL ESTIMATE

TIME 14:44:40

TITLE PAGE 1

Phase III Tunnel - Contract E
Spur Tunnel
Sta 0 + 00 to Sta 70 + 15
Main Tunnel Intersection to
Two Bridges Inlet

Designed By: Engineering Div, Nashville Dist
Estimated By: H.F. (Bud) Kiefer, CENAN-PR-T

Prepared By: Civil Design Team, Tech Eng Br.
Passaic River Division

Date: 04/08/95
Est Construction Time: 483 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

PROJECT PIIE2: Phase III Tunnel - Contract E - Spur Tunnel
FINAL ESTIMATE

TABLE OF CONTENTS

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	4
PROJECT DIRECT SUMMARY - LEVEL 3.....	7

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

PROJECT PIIIE2: Phase III Tunnel - Contract E - Spur Tunnel

FINAL ESTIMATE

** PROJECT OWNER SUMMARY - LEVEL 3 **

	QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents		427,248	64,087	491,335		
	General Design Memorandum		427,248	64,087	491,335		
	LANDS AND DAMAGES		427,248	64,087	491,335		
15 FLOODWAY CONTROL & DIV STRUCT							
15.01 Mob/Demob & Site Prep Work							
15.01.01	Mobilization and Demobilization		600,474	40,000	640,474		
15.01.02	Site Preparation		445,077	30,000	475,077		
	Mob/Demob & Site Prep Work		1,045,551	70,000	1,115,551		
15.02 Excavation							
15.02.01	Shaft Support		4,269,491	256,200	4,525,691		
15.02.02	Weekend Maintenance & Watch	56.00 DAY	1,065,116	78,000	1,143,116	20412.79	
15.02.03	Setup & Breakdown TBM		505,520	69,500	575,020		
15.02.04	Drill & Blast Start Ch/Tail Tun	23056.00 CY	3,961,034	422,390	4,383,424	190.12	
15.02.06	Mole Tunnel - Sandstone & Shale	88482.00 CY	11,560,666	1,023,440	12,584,106	142.22	
15.02.07	Mole Tunnel - Basalt	24779.00 CY	7,987,215	685,438	8,672,653	350.00	
	Excavation		29,349,042	2,534,968	31,884,010		
15.03 Rockbolts							
15.03.01	Rockbolts	9323.00 EA	2,097,139	326,000	2,423,139	259.91	
	Rockbolts	9323.00 EA	2,097,139	326,000	2,423,139	259.91	
15.04 Grout Inflows							
15.04.01	Grout Inflows	45.00 DAY	1,440,254	182,000	1,622,254	36050.09	
	Grout Inflows	45.00 DAY	1,440,254	182,000	1,622,254	36050.09	
15.05 Fault Zone							
15.05.01	Fault Zone		1,220,208	202,000	1,422,208		

PROJECT PIIE2: Phase III Tunnel - Contract E - Spur Tunnel

FINAL ESTIMATE

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES
Fault Zone				1,220,208	202,000	1,422,208		
15.07 Welded Wire Fabric								
15.07.01	Welded Wire Fabric	39833.00	SF	154,494	10,900	165,394	4.15	
	Welded Wire Fabric	39833.00	SF	154,494	10,900	165,394	4.15	
15.08 Concrete								
15.08.01	Shaft Support			2,076,482	136,800	2,213,282		
15.08.02	Weekend Maintenance & Watch	44.00	DAY	764,930	83,400	848,330	19280.22	
15.08.03	Set Up & Breakdown Concrete Form	40.00	SHF	232,393	30,400	262,793	6569.82	
15.08.04	Invert Clean Up	26.00	DAY	689,357	68,800	758,157	29159.89	
15.08.05	Form & Place Concrete	25784.00	CY	5,623,474	637,352	6,260,826	242.82	
	Concrete	25784.00	CY	9,386,635	956,752	10,343,387	401.16	
15.09 Contact Grout								
15.09.01	Contact Grout	14.00	DAY	336,440	35,803	372,243	26588.80	
	Contact Grout	14.00	DAY	336,440	35,803	372,243	26588.80	
15.10 Final Clean Up								
15.10.01	Final Clean Up	7.00	DAY	141,918	9,300	151,218	21602.60	
	Final Clean Up	7.00	DAY	141,918	9,300	151,218	21602.60	
15.11 Instrumentation								
15.11.01	Instrumentation			75,828	5,000	80,828		
	Instrumentation			75,828	5,000	80,828		
15.12 Maint & Protection of Traffic								
15.12.01	Maint & Protection of Traffic			1,395,778	92,000	1,487,778		
	Maint & Protection of Traffic			1,395,778	92,000	1,487,778		
	FLOODWAY CONTROL & DIV STRUCT			46,643,288	4,424,723	51,068,011		

PROJECT PIIIE2: Phase III Tunnel - Contract E - Spur Tunnel

FINAL ESTIMATE

** PROJECT OWNER SUMMARY - LEVEL 3 **

	QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT NOTES

30	PLANNING, ENGINEERING AND DESIGN					
30.20	General Design Memorandum					
30.20.08			3,986,483	578,965	4,565,448	
			-----	-----	-----	
			General Design Memorandum	3,986,483	578,965	4,565,448
			-----	-----	-----	
			PLANNING, ENGINEERING AND DESIGN	3,986,483	578,965	4,565,448
31	CONSTRUCTION MANAGEMENT					
31.23	Construction Contracts					
31.23.11			2,332,164	583,041	2,915,205	
			-----	-----	-----	
			Construction Contracts	2,332,164	583,041	2,915,205
			-----	-----	-----	
			CONSTRUCTION MANAGEMENT	2,332,164	583,041	2,915,205
			-----	-----	-----	
			Phase III Tunnel - Contract E	53,389,183	5,650,816	59,039,999

PROJECT PIIIE2: Phase III Tunnel - Contract E - Spur Tunnel

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNL

01 LANDS AND DAMAGES										
01.20 General Design Memorandum										
01.20.03	Real Estate Analysis Docu			427,248	0	0	0	0	427,248	

	General Design Memorandum			427,248	0	0	0	0	427,248	

	LANDS AND DAMAGES			427,248	0	0	0	0	427,248	

15 FLOODWAY CONTROL & DIV STRUCT										
15.01 Mob/Demob & Site Prep Work										
15.01.01	Mobilization and Demobili			395,943	129,353	54,070	5,951	15,157	600,474	
15.01.02	Site Preparation			293,476	95,878	40,077	4,411	11,235	445,077	

	Mob/Demob & Site Prep Wor			689,419	225,231	94,147	10,361	26,392	1,045,551	

15.02 Excavation										
15.02.01	Shaft Support			2,815,233	919,729	384,447	42,310	107,772	4,269,491	
15.02.02	Weekend Maintenance & Wat	56.00	DAY	702,320	229,446	95,909	10,555	26,886	1,065,116	19019.93
15.02.03	Setup & Breakdown TBM			333,331	108,898	45,520	5,010	12,760	505,520	
15.02.04	Drill & Blast Start Ch/Ta	23056.00	CY	2,611,841	853,281	356,672	39,254	99,986	3,961,034	171.80
15.02.06	Mole Tunnel - Sandstone &	88482.00	CY	7,622,915	2,490,385	1,040,981	114,566	291,818	11,560,666	130.66
15.02.07	Mole Tunnel - Basalt	24779.00	CY	5,266,640	1,720,597	719,210	79,153	201,616	7,987,215	322.34

	Excavation			19,352,282	6,322,336	2,642,738	290,848	740,838	29,349,042	

15.03 Rockbolts										
15.03.01	Rockbolts	9323.00	EA	1,382,820	451,763	188,837	20,783	52,937	2,097,139	224.94

	Rockbolts	9323.00	EA	1,382,820	451,763	188,837	20,783	52,937	2,097,139	224.94

15.04 Grout Inflows										
15.04.01	Grout Inflows	45.00	DAY	949,680	310,258	129,688	14,273	36,355	1,440,254	32005.64

	Grout Inflows	45.00	DAY	949,680	310,258	129,688	14,273	36,355	1,440,254	32005.64

15.05 Fault Zone										
15.05.01	Fault Zone			804,585	262,856	109,874	12,092	30,801	1,220,208	

		QUANTITY UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT
Fault Zone			804,585	262,856	109,874	12,092	30,801	1,220,208	
15.07 Welded Wire Fabric									
15.07.01	Welded Wire Fabric	39833.00 SF	101,871	33,281	13,911	1,531	3,900	154,494	3.88
	Welded Wire Fabric	39833.00 SF	101,871	33,281	13,911	1,531	3,900	154,494	3.88
15.08 Concrete									
15.08.01	Shaft Support		1,369,198	447,313	186,977	20,578	52,415	2,076,482	
15.08.02	Weekend Maintenance & Wat	44.00 DAY	504,382	164,780	68,878	7,580	19,309	764,930	17384.77
15.08.03	Set Up & Breakdown Concre	40.00 SHF	153,236	50,062	20,926	2,303	5,866	232,393	5809.82
15.08.04	Invert Clean Up	26.00 DAY	454,551	148,501	62,073	6,831	17,401	689,357	26513.73
15.08.05	Form & Place Concrete	25784.00 CY	3,708,027	1,211,402	506,366	55,728	141,950	5,623,474	218.10
	Concrete	25784.00 CY	6,189,395	2,022,058	845,221	93,021	236,940	9,386,635	364.05
15.09 Contact Grout									
15.09.01	Contact Grout	14.00 DAY	221,843	72,476	30,295	3,334	8,493	336,440	24031.44
	Contact Grout	14.00 DAY	221,843	72,476	30,295	3,334	8,493	336,440	24031.44
15.10 Final Clean Up									
15.10.01	Final Clean Up	7.00 DAY	93,579	30,572	12,779	1,406	3,582	141,918	20274.03
	Final Clean Up	7.00 DAY	93,579	30,572	12,779	1,406	3,582	141,918	20274.03
15.11 Instrumentation									
15.11.01	Instrumentation		50,000	16,335	6,828	751	1,914	75,828	
	Instrumentation		50,000	16,335	6,828	751	1,914	75,828	
15.12 Maint & Protection of Traffi									
15.12.01	Maint & Protection of Tra		920,354	300,677	125,683	13,832	35,233	1,395,778	
	Maint & Protection of Tra		920,354	300,677	125,683	13,832	35,233	1,395,778	
	FLOODWAY CONTROL & DIV ST		30,755,827	10,047,843	4,200,000	462,233	1,177,385	46,643,288	

	QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT

30	PLANNING, ENGINEERING AND DESIG								
30.20	General Design Memorandum								
30.20.08	Final Report Documentatio		3,986,483	0	0	0	0	3,986,483	
	General Design Memorandum		3,986,483	0	0	0	0	3,986,483	
	PLANNING, ENGINEERING AND		3,986,483	0	0	0	0	3,986,483	
31	CONSTRUCTION MANAGEMENT								
31.23	Construction Contracts								
31.23.11	Supervision and Administr		2,332,164	0	0	0	0	2,332,164	
	Construction Contracts		2,332,164	0	0	0	0	2,332,164	
	CONSTRUCTION MANAGEMENT		2,332,164	0	0	0	0	2,332,164	
	Phase III Tunnel - Contra		37,501,722	10,047,843	4,200,000	462,233	1,177,385	53,389,183	
	Contingency							5,650,816	
	TOTAL INCL OWNER COSTS							59,039,999	

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents		427,248	0	0	0	427,248	
			-----	-----	-----	-----	-----	
	General Design Memorandum		427,248	0	0	0	427,248	
			-----	-----	-----	-----	-----	
	LANDS AND DAMAGES		427,248	0	0	0	427,248	
15 FLOODWAY CONTROL & DIV STRUCT								
15.01 Mob/Demob & Site Prep Work								
15.01.01	Mobilization and Demobilization		305,337	59,407	0	31,199	395,943	
15.01.02	Site Preparation		146,372	65,497	50,000	31,607	293,476	
			-----	-----	-----	-----	-----	
	Mob/Demob & Site Prep Work		451,710	124,904	50,000	62,806	689,419	
15.02 Excavation								
15.02.01	Shaft Support		2,255,902	333,740	0	225,591	2,815,233	
15.02.02	Weekend Maintenance & Watch	56.00 DAY	524,954	124,870	0	52,496	702,320	12541.44
15.02.03	Setup & Breakdown TBM		272,165	28,951	5,000	27,216	333,331	
15.02.04	Drill & Blast Start Ch/Tail Tun	23056.00 CY	804,997	1,357,449	403,480	45,916	2,611,841	113.28
15.02.06	Mole Tunnel - Sandstone & Shale	88482.00 CY	1,955,849	4,862,099	759,803	45,165	7,622,915	86.15
15.02.07	Mole Tunnel - Basalt	24779.00 CY	599,809	4,210,347	438,628	17,856	5,266,640	212.54
			-----	-----	-----	-----	-----	
	Excavation		6,413,676	10917457	1,606,911	414,239	19,352,282	
15.03 Rockbolts								
15.03.01	Rockbolts	9323.00 EA	1,060,340	29,982	186,460	106,038	1,382,820	148.32
			-----	-----	-----	-----	-----	
	Rockbolts	9323.00 EA	1,060,340	29,982	186,460	106,038	1,382,820	148.32
15.04 Grout Inflows								
15.04.01	Grout Inflows	45.00 DAY	494,288	61,309	344,655	49,428	949,680	21104.00
			-----	-----	-----	-----	-----	
	Grout Inflows	45.00 DAY	494,288	61,309	344,655	49,428	949,680	21104.00
15.05 Fault Zone								
15.05.01	Fault Zone		116,411	11,655	664,878	11,641	804,585	

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
Fault Zone				116,411	11,655	664,878	11,641	804,585	
15.07 Welded Wire Fabric									
15.07.01	Welded Wire Fabric	39833.00	SF	52,160	4,662	39,833	5,216	101,871	2.56
	Welded Wire Fabric	39833.00	SF	52,160	4,662	39,833	5,216	101,871	2.56
15.08 Concrete									
15.08.01	Shaft Support			1,093,307	166,561	0	109,330	1,369,198	
15.08.02	Weekend Maintenance & Watch	44.00	DAY	369,325	98,124	0	36,933	504,382	11463.23
15.08.03	Set Up & Breakdown Concrete Form	40.00	SHF	126,821	13,734	0	12,682	153,236	3830.90
15.08.04	Invert Clean Up	26.00	DAY	335,968	84,986	0	33,597	454,551	17482.73
15.08.05	Form & Place Concrete	25784.00	CY	831,638	835,808	1,957,418	83,163	3,708,027	143.81
	Concrete	25784.00	CY	2,757,059	1,199,214	1,957,418	275,705	6,189,395	240.05
15.09 Contact Grout									
15.09.01	Contact Grout	14.00	DAY	149,478	34,440	22,977	14,948	221,843	15845.94
	Contact Grout	14.00	DAY	149,478	34,440	22,977	14,948	221,843	15845.94
15.10 Final Clean Up									
15.10.01	Final Clean Up	7.00	DAY	73,513	12,715	0	7,351	93,579	13368.37
	Final Clean Up	7.00	DAY	73,513	12,715	0	7,351	93,579	13368.37
15.11 Instrumentation									
15.11.01	Instrumentation			10,000	30,000	5,000	5,000	50,000	
	Instrumentation			10,000	30,000	5,000	5,000	50,000	
15.12 Maint & Protection of Traffic									
15.12.01	Maint & Protection of Traffic			738,494	97,017	5,000	79,842	920,354	
	Maint & Protection of Traffic			738,494	97,017	5,000	79,842	920,354	
	FLOODWAY CONTROL & DIV STRUCT			12,317,128	12523354	4,883,132	1,032,213	30,755,827	

PROJECT PIIIE2: Phase III Tunnel - Contract E - Spur Tunnel

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation		3,986,483	0	0	0	3,986,483	
	General Design Memorandum		3,986,483	0	0	0	3,986,483	
	PLANNING, ENGINEERING AND DESIGN		3,986,483	0	0	0	3,986,483	

31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration		2,332,164	0	0	0	2,332,164	
	Construction Contracts		2,332,164	0	0	0	2,332,164	
	CONSTRUCTION MANAGEMENT		2,332,164	0	0	0	2,332,164	
	Phase III Tunnel - Contract E		19,063,023	12523354	4,883,132	1,032,213	37,501,722	
	Prime Contractor's Total Overhead						10,047,843	
	SUBTOTAL						47,549,565	
	Prime Contractor's Profit						4,200,000	
	SUBTOTAL						51,749,565	
	Prime Contractor's Bond						462,233	
	SUBTOTAL						52,211,798	
	Insurance and Permits						1,177,385	
	TOTAL INCL INDIRECTS						53,389,183	
	Contingency						5,650,816	
	TOTAL INCL OWNER COSTS						59,039,999	

ATTACHMENT M-CACES

DA - 14

KEARNY POINT LEVEE/FLOODWALL SYSTEM

Wed 02 Aug 1995

U.S. Army Corps of Engineers
PROJECT KERNYP: Kearny Point Project Cost - Passaic River Flood Damage
FINAL ESTIMATE

TIME 08:44:21

TITLE PAGE 1

Kearny Point Project Cost
Passaic River Flood Damage
Reduction Project
Kearny Point
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: The RBA Group

Prepared By: The RBA Group
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/02/95
Est Construction Time: 882 Days

MCACES GOLD EDITION
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

PROJECT KERNYP: Kearny Point Project Cost - Passaic River Flood Damage
FINAL ESTIMATE

TABLE OF CONTENTS

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		QUANTITY	UOM	CONTRACT	CONTINGEN	TOTAL COST	UNIT

01	LANDS AND DAMAGES						
01.20	General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	4,604,787	690,718	5,295,505	5295505
	General Design Memorandum	1.00	EA	4,604,787	690,718	5,295,505	5295505
	LANDS AND DAMAGES	1.00	EA	4,604,787	690,718	5,295,505	5295505
02	RELOCATIONS						
02.03	Cemetery, Utilities, & Structure						
02.03.18	Utilities	1.00	EA	267,947	40,000	307,947	307947
	Cemetery, Utilities, & Structure	1.00	EA	267,947	40,000	307,947	307947
	RELOCATIONS	1.00	EA	267,947	40,000	307,947	307947
11	LEVEES AND FLOODWALLS						
11.00	Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	55,798	8,325	64,123	64123
11.00.02	Traffic Control	1.00	EA	222,684	30,000	252,684	252684
11.00.03	Erosion Control	1.00	EA	142,221	20,000	162,221	162221
11.00.04	Clearing and Grubbing	1.00	EA	13,624	2,000	15,624	15624
11.00.05	Excavating and Embankment	1.00	EA	517,202	78,000	595,202	595202
11.00.07	Closure Structures			2,718,824	400,000	3,118,824	
11.00.08	Interior Drainage			822,016	125,000	947,016	
11.00.09	Box Piling			3,432,664	515,000	3,947,664	
11.00.10	Cofferdam Construction	580.00	LF	2,635,351	400,000	3,035,351	5233.36
11.00.11	Beautification			-81,854	12,278	94,132	
	Associated General Items	1.00	EA	10,642,236	1590603	12,232,839	12232839
11.01	Levees						
11.01.01	Excavation and Embankment	1.00	EA	341,414	55,500	396,914	396914
	Levees	1.00	EA	341,414	55,500	396,914	396914
11.02	Floodwall						
11.02.01	Excavation and Embankment	1.00	EA	266,576	41,000	307,576	307576

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
11.02.02	Concrete Wall Erection	1.00	EA	16,839,728	2625000	19,464,728	19464728
11.02.03	Drainage	1.00	EA	110,426	16,750	127,176	127176
	Floodwall	1.00	EA	17,216,730	2682750	19,899,480	19899480
	LEVEES AND FLOODWALLS	1.00	EA	28,200,380	4328853	32,529,233	32529233
13 PUMPING PLANTS							
13.00 Pumping Plants							
13.00.99	Associated General Items	1.00	EA	399,476	60,000	459,476	459476
	Pumping Plants	1.00	EA	399,476	60,000	459,476	459476
	PUMPING PLANTS	1.00	EA	399,476	60,000	459,476	459476
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08	Final Report Documentation			4,829,763	561,076	5,390,839	
	General Design Memorandum	1.00	EA	4,829,763	561,076	5,390,839	5390839
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	4,829,763	561,076	5,390,839	5390839
31 CONSTRUCTION MANAGEMENT							
31.23 Construction Contracts							
31.23.11	Supervision and Administration			2,165,085	324,763	2,489,848	
	Construction Contracts	1.00	EA	2,165,085	324,763	2,489,848	2489848
	CONSTRUCTION MANAGEMENT	1.00	EA	2,165,085	324,763	2,489,848	2489848
	Kearny Point Project Cost	1.00	EA	40,467,438	6005410	46,472,848	46472848

PROJECT KERNYP: Kearny Point Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	4,604,787	0	0	0	0	0	4,604,787	4604787
	General Design Memorandum	1.00	EA	4,604,787	0	0	0	0	0	4,604,787	4604787
	LANDS AND DAMAGES	1.00	EA	4,604,787	0	0	0	0	0	4,604,787	4604787
02 RELOCATIONS											
02.03 Cemetery, Utilities, & Structure											
02.03.18	Utilities	1.00	EA	224,700	12,388	9,484	17,938	1,190	2,247	267,947	267947
	Cemetery, Utilities, & Structure	1.00	EA	224,700	12,388	9,484	17,938	1,190	2,247	267,947	267947
	RELOCATIONS	1.00	EA	224,700	12,388	9,484	17,938	1,190	2,247	267,947	267947
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	46,792	2,580	1,975	3,735	248	468	55,798	55798
11.00.02	Traffic Control	1.00	EA	186,742	10,296	7,882	14,908	989	1,867	222,684	222684
11.00.03	Erosion Control	1.00	EA	119,266	6,575	5,034	9,521	632	1,193	142,221	142221
11.00.04	Clearing and Grubbing	1.00	EA	11,425	630	482	912	61	114	13,624	13624
11.00.05	Excavating and Embankment	1.00	EA	433,724	23,912	18,305	34,625	2,297	4,337	517,202	517202
11.00.07	Closure Structures			2,280,000	125,703	96,228	182,015	12,077	22,800	2,718,824	
11.00.08	Interior Drainage			689,341	38,005	29,094	55,031	3,652	6,893	822,016	
11.00.09	Box Piling			2,878,625	158,706	121,493	229,804	15,248	28,786	3,432,664	
11.00.10	Cofferdam Construction	580.00	LF	2,210,000	121,843	93,274	176,427	11,707	22,100	2,635,351	4543.71
11.00.11	Beautification			81,854	0	0	0	0	0	81,854	
	Associated General Items	1.00	EA	8,937,769	488,251	373,767	706,980	46,911	88,559	10,642,236	10642236
11.01 Levees											
11.01.01	Excavation and Embankment	1.00	EA	286,309	15,785	12,084	22,856	1,517	2,863	341,414	341414
	Levees	1.00	EA	286,309	15,785	12,084	22,856	1,517	2,863	341,414	341414
11.02 Floodwall											
11.02.01	Excavation and Embankment	1.00	EA	223,550	12,325	9,435	17,846	1,184	2,235	266,576	266576

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	COST	UNIT
11.02.02	Concrete Wall Erection	1.00	EA	14,121,762	778,571	596,013	1127359	74,804	141218	16,839,728	16839728		
11.02.03	Drainage	1.00	EA	92,603	5,105	3,908	7,393	491	926	110,426	110426		
	Floodwall	1.00	EA	14,437,915	796,002	609,357	1152598	76,479	144379	17,216,730	17216730		
	LEVEES AND FLOODWALLS	1.00	EA	23,661,993	1300037	995,207	1882434	124906	235801	28,200,380	28200380		
13 PUMPING PLANTS													
13.00 Pumping Plants													
13.00.99	Associated General Items	1.00	EA	335,000	18,469	14,139	26,743	1,775	3,350	399,476	399476		
	Pumping Plants	1.00	EA	335,000	18,469	14,139	26,743	1,775	3,350	399,476	399476		
	PUMPING PLANTS	1.00	EA	335,000	18,469	14,139	26,743	1,775	3,350	399,476	399476		
30 PLANNING, ENGINEERING AND DESIGN													
30.20 General Design Memorandum													
30.20.08	Final Report Documentation			4,829,763	0	0	0	0	0	4,829,763			
	General Design Memorandum	1.00	EA	4,829,763	0	0	0	0	0	4,829,763	4829763		
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	4,829,763	0	0	0	0	0	4,829,763	4829763		
31 CONSTRUCTION MANAGEMENT													
31.23 Construction Contracts													
31.23.11	Supervision and Administration			2,165,085	0	0	0	0	0	2,165,085			
	Construction Contracts	1.00	EA	2,165,085	0	0	0	0	0	2,165,085	2165085		
	CONSTRUCTION MANAGEMENT	1.00	EA	2,165,085	0	0	0	0	0	2,165,085	2165085		
	Kearny Point Project Cost Contingency	1.00	EA	35,821,328	1330895	1018829	1927116	127871	241398	40,467,438	40467438		
	TOTAL INCL OWNER COSTS									46,472,848			

PROJECT KERNYP: Kearny Point Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 5

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	4604787	0	0	4,604,787	4604787
	General Design Memorandum	1.00	EA	4604787	0	0	4,604,787	4604787
	LANDS AND DAMAGES	1.00	EA	4604787	0	0	4,604,787	4604787
02	RELOCATIONS							
02.03	Cemetery, Utilities, & Structure							
02.03.18	Utilities	1.00	EA	0	0	224,700	224,700	224700
	Cemetery, Utilities, & Structure	1.00	EA	0	0	224,700	224,700	224700
	RELOCATIONS	1.00	EA	0	0	224,700	224,700	224700
11	LEVEES AND FLOODWALLS							
11.00	Associated General Items							
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	32,269	14,523	0	46,792	46792
11.00.02	Traffic Control	1.00	EA	186,742	0	0	186,742	186742
11.00.03	Erosion Control	1.00	EA	86,149	15,440	17,677	119,266	119266
11.00.04	Clearing and Grubbing	1.00	EA	8,024	3,400	0	11,425	11425
11.00.05	Excavating and Embankment	1.00	EA	23,636	6,138	403,950	433,724	433724
11.00.07	Closure Structures			0	0	2280000	2,280,000	
11.00.08	Interior Drainage			0	0	689,341	689,341	
11.00.09	Box Piling			0	0	2878625	2,878,625	
11.00.10	Cofferdam Construction	580.00	LF	0	0	2210000	2,210,000	3810.34
11.00.11	Beautification			25,142	0	56,711	81,854	
	Associated General Items	1.00	EA	361,963	39,501	8536305	8,937,769	8937769
11.01	Levees							
11.01.01	Excavation and Embankment	1.00	EA	95,222	88,515	102,572	286,309	286309
	Levees	1.00	EA	95,222	88,515	102,572	286,309	286309
11.02	Floodwall							
11.02.01	Excavation and Embankment	1.00	EA	57,662	20,928	144,960	223,550	223550

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
11.02.02	Concrete Wall Erection	1.00	EA	4994715	672,728	8454319	14,121,762	14121762
11.02.03	Drainage	1.00	EA	7,818	2,541	82,245	92,603	92603
	Floodwall	1.00	EA	5060195	696,196	8681524	14,437,915	14437915
	LEVEES AND FLOODWALLS	1.00	EA	5517380	824,212	17320401	23,661,993	23661993
13 PUMPING PLANTS								
13.00 Pumping Plants								
13.00.99	Associated General Items	1.00	EA	0	0	335,000	335,000	335000
	Pumping Plants	1.00	EA	0	0	335,000	335,000	335000
	PUMPING PLANTS	1.00	EA	0	0	335,000	335,000	335000
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation			4829763	0	0	4,829,763	
	General Design Memorandum	1.00	EA	4829763	0	0	4,829,763	4829763
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	4829763	0	0	4,829,763	4829763
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11	Supervision and Administration			2165085	0	0	2,165,085	
	Construction Contracts	1.00	EA	2165085	0	0	2,165,085	2165085
	CONSTRUCTION MANAGEMENT	1.00	EA	2165085	0	0	2,165,085	2165085
	Kearny Point Project Cost	1.00	EA	17117015	824,212	17880101	35,821,328	35821328
	Prime Contractor's Field Overhead						1,330,895	
	SUBTOTAL						37,152,223	
	Prime's Home Office Expense						1,018,829	
	SUBTOTAL						38,171,053	
	Prime Contractor's Profit						1,927,116	
	SUBTOTAL						40,098,169	
	Prime Contractor's Bond						127,871	

ATTACHMENT M-CACES

DA - 15

LISTER/TURNPIKE/DOREMUS LEVEE/FLOODWALL
SYSTEM - Section A

Wed 02 Aug 1995

U.S. Army Corps of Engineers
PROJECT LTD_1A: Lis/Tpk/Dor-Sect A, Project Cost - Passaic River
FINAL ESTIMATE

TIME 14:45:27

TITLE PAGE 1

Lis/Tpk/Dor-Sect A, Project Cost
Passaic River
Flood Damage Reduction Project
Lister/Tpke/Doremus - Section A
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: The RBA Group

Prepared By: The RBA Group
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/07/95
Est Construction Time: 567 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	6

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01 LANDS AND DAMAGES						
01.20 General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	2,791,741	418,761	3,210,502 3210502
	General Design Memorandum	1.00	EA	2,791,741	418,761	3,210,502 3210502
	LANDS AND DAMAGES	1.00	EA	2,791,741	418,761	3,210,502 3210502
02 RELOCATIONS						
02.03 Cemetery, Utilities, & Structure						
02.03.18	Utilities	1.00	EA	183,349	35,000	218,349 218349
	Cemetery, Utilities, & Structure	1.00	EA	183,349	35,000	218,349 218349
	RELOCATIONS	1.00	EA	183,349	35,000	218,349 218349
11 LEVEES AND FLOODWALLS						
11.00 Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	53,757	7,900	61,657 61657
11.00.02	Traffic Control	1.00	EA	153,762	25,000	178,762 178762
11.00.03	Erosion Control	1.00	EA	60,897	8,500	69,397 69397
11.00.04	Clearing and Grubbing	1.00	EA	29,031	3,500	32,531 32531
11.00.05	Excavating and Embankment	1.00	EA	313,427	30,000	343,427 343427
11.00.07	Closure Structures			1,142,456	225,000	1,367,456
11.00.08	Interior Drainage			649,397	130,000	779,397
11.00.09	Box Piling	780.00	LF	1,671,444	340,000	2,011,444 2578.77
11.00.10	Beautification			109,371	16,406	125,777
	Associated General Items	1.00	EA	4,183,543	786,306	4,969,848 4969848
11.01 Levees						
11.01.01	Excavation and Embankment	1.00	EA	351,800	52,200	404,000 404000
	Levees	1.00	EA	351,800	52,200	404,000 404000
11.02 Floodwall						
11.02.01	Excavation and Embankment	1.00	EA	92,350	17,500	109,850 109850
11.02.02	Concrete Wall Erection	1.00	EA	6,628,211	1040000	7,668,211 7668211

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	COST	UNIT
	Floodwall	1.00	EA	6,720,561	1057500	7,778,061	7778061	
	LEVEES AND FLOODWALLS	1.00	EA	11,255,904	1896006	13,151,910	13151910	
13	PUMPING PLANT							
13.00	Pumping Plant							
13.00.99	Associated General Items	1.00	EA	827,509	150,000	977,509	977509	
	Pumping Plant	1.00	EA	827,509	150,000	977,509	977509	
	PUMPING PLANT	1.00	EA	827,509	150,000	977,509	977509	
14	RECREATION FACILITIES							
14.00	Recreation Facilities							
14.00.23	Site Grading and Landscaping	1.00	EA	19,121	2,868	21,989	21989	
	Recreation Facilities	1.00	EA	19,121	2,868	21,989	21989	
	RECREATION FACILITIES	1.00	EA	19,121	2,868	21,989	21989	
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation	10.00	EA	2,740,551	345,367	3,085,918	308592	
	General Design Memorandum	1.00	EA	2,740,551	345,367	3,085,918	3085918	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	2,740,551	345,367	3,085,918	3085918	
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration	1.00	EA	859,372	128,906	988,278	988278	
	Construction Contracts	1.00	EA	859,372	128,906	988,278	988278	
	CONSTRUCTION MANAGEMENT	1.00	EA	859,372	128,906	988,278	988278	
	Lis/Tpk/Dor-Sect A, Project Cost	1.00	EA	18,677,547	2976908	21,654,455	21654455	

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES												
01.20 General Design Memorandum												
01.20.03	Real Estate Analysis Documents	1.00	EA	2,791,741	0	0	0	0	0	0	2,791,741	2791741

	General Design Memorandum	1.00	EA	2,791,741	0	0	0	0	0	0	2,791,741	2791741

	LANDS AND DAMAGES	1.00	EA	2,791,741	0	0	0	0	0	0	2,791,741	2791741
02 RELOCATIONS												
02.03 Cemetery, Utilities, & Structure												
02.03.18	Utilities	1.00	EA	148,450	13,760	6,488	12,273	894	1,485		183,349	183349

	Cemetery, Utilities, & Structure	1.00	EA	148,450	13,760	6,488	12,273	894	1,485		183,349	183349

	RELOCATIONS	1.00	EA	148,450	13,760	6,488	12,273	894	1,485		183,349	183349
11 LEVEES AND FLOODWALLS												
11.00 Associated General Items												
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	43,525	4,034	1,902	3,598	262	435		53,757	53757
11.00.02	Traffic Control	1.00	EA	124,495	11,539	5,441	10,292	749	1,245		153,762	153762
11.00.03	Erosion Control	1.00	EA	49,306	4,570	2,155	4,076	297	493		60,897	60897
11.00.04	Clearing and Grubbing	1.00	EA	23,505	2,179	1,027	1,943	141	235		29,031	29031
11.00.05	Excavating and Embankment	1.00	EA	253,769	23,521	11,092	20,980	1,527	2,538		313,427	313427
11.00.07	Closure Structures			925,000	85,737	40,429	76,472	5,568	9,250		1,142,456	
11.00.08	Interior Drainage			525,790	48,735	22,981	43,469	3,165	5,258		649,397	
11.00.09	Box Piling	780.00	LF	1,353,300	125,435	59,149	111,881	8,146	13,533		1,671,444	2142.88
11.00.10	Beautification			109,371	0	0	0	0	0		109,371	

	Associated General Items	1.00	EA	3,408,061	305,750	144,178	272,712	19,855	32,987		4,183,543	4183543
11.01 Levees												
11.01.01	Excavation and Embankment	1.00	EA	284,838	26,401	12,450	23,548	1,714	2,848		351,800	351800

	Levees	1.00	EA	284,838	26,401	12,450	23,548	1,714	2,848		351,800	351800
11.02 Floodwall												
11.02.01	Excavation and Embankment	1.00	EA	74,772	6,931	3,268	6,182	450	748		92,350	92350
11.02.02	Concrete Wall Erection	1.00	EA	5,366,591	497,421	234,560	443,671	32,302	53,666		6,628,211	6628211

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

Floodwall	1.00	EA	5,441,363	504,351	237,829	449,853	32,752	54,414	6,720,561	6720561	
LEVEES AND FLOODWALLS	1.00	EA	9,134,262	836,503	394,456	746,113	54,322	90,249	11,255,904	11255904	
13 PUMPING PLANT											
13.00 Pumping Plant											
13.00.99 Associated General Items	1.00	EA	670,000	62,101	29,284	55,391	4,033	6,700	827,509	827509	
Pumping Plant	1.00	EA	670,000	62,101	29,284	55,391	4,033	6,700	827,509	827509	
PUMPING PLANT	1.00	EA	670,000	62,101	29,284	55,391	4,033	6,700	827,509	827509	
14 RECREATION FACILITIES											
14.00 Recreation Facilities											
14.00.23 Site Grading and Landscaping	1.00	EA	19,121	0	0	0	0	0	19,121	19121	
Recreation Facilities	1.00	EA	19,121	0	0	0	0	0	19,121	19121	
RECREATION FACILITIES	1.00	EA	19,121	0	0	0	0	0	19,121	19121	
30 PLANNING, ENGINEERING AND DESIGN											
30.20 General Design Memorandum											
30.20.08 Final Report Documentation	10.00	EA	2,740,551	0	0	0	0	0	2,740,551	2740551	
General Design Memorandum	1.00	EA	2,740,551	0	0	0	0	0	2,740,551	2740551	
PLANNING, ENGINEERING AND DESIGN	1.00	EA	2,740,551	0	0	0	0	0	2,740,551	2740551	
31 CONSTRUCTION MANAGEMENT											
31.23 Construction Contracts											
31.23.11 Supervision and Administration	1.00	EA	859,372	0	0	0	0	0	859,372	859372	
Construction Contracts	1.00	EA	859,372	0	0	0	0	0	859,372	859372	
CONSTRUCTION MANAGEMENT	1.00	EA	859,372	0	0	0	0	0	859,372	859372	
Lis/Tpk/Dor-Sect A, Project Cost Contingency	1.00	EA	16,363,497	912,363	430,228	813,777	59,248	98,433	18,677,547	18677547	2,976,908

Wed 02 Aug 1995 .

U.S. Army Corps of Engineers

TIME 14:45:27

PROJECT LTD_1A: Lis/Tpk/Dor-Sect A, Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 5

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT
TOTAL INCL OWNER COSTS										21,654,455	

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	2791741	0	0	2,791,741	2791741
	General Design Memorandum	1.00	EA	2791741	0	0	2,791,741	2791741
	LANDS AND DAMAGES	1.00	EA	2791741	0	0	2,791,741	2791741
02	RELOCATIONS							
02.03	Cemetery, Utilities, & Structure							
02.03.18	Utilities	1.00	EA	0	0	148,450	148,450	148450
	Cemetery, Utilities, & Structure	1.00	EA	0	0	148,450	148,450	148450
	RELOCATIONS	1.00	EA	0	0	148,450	148,450	148450
11	LEVEES AND FLOODWALLS							
11.00	Associated General Items							
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	29,921	13,604	0	43,525	43525
11.00.02	Traffic Control	1.00	EA	124,495	0	0	124,495	124495
11.00.03	Erosion Control	1.00	EA	35,615	6,383	7,308	49,306	49306
11.00.04	Clearing and Grubbing	1.00	EA	16,496	7,009	0	23,505	23505
11.00.05	Excavating and Embankment	1.00	EA	13,830	3,591	236,348	253,769	253769
11.00.07	Closure Structures			0	0	925,000	925,000	
11.00.08	Interior Drainage			0	0	525,790	525,790	
11.00.09	Box Piling	780.00	LF	0	0	1353300	1,353,300	1735.00
11.00.10	Beautification			30,851	0	78,521	109,371	
	Associated General Items	1.00	EA	251,206	30,587	3126267	3,408,061	3408061
11.01	Levees							
11.01.01	Excavation and Embankment	1.00	EA	89,584	85,375	109,880	284,838	284838
	Levees	1.00	EA	89,584	85,375	109,880	284,838	284838
11.02	Floodwall							
11.02.01	Excavation and Embankment	1.00	EA	19,290	7,003	48,480	74,772	74772
11.02.02	Concrete Wall Erection	1.00	EA	1888658	256,689	3221244	5,366,591	5366591

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
	Floodwall	1.00	EA	1907948	263,691	3269724	5,441,363	5441363
	LEVEES AND FLOODWALLS	1.00	EA	2248737	379,653	6505872	9,134,262	9134262
13 PUMPING PLANT								
13.00 Pumping Plant								
13.00.99	Associated General Items	1.00	EA	0	0	670,000	670,000	670000
	Pumping Plant	1.00	EA	0	0	670,000	670,000	670000
	PUMPING PLANT	1.00	EA	0	0	670,000	670,000	670000
14 RECREATION FACILITIES								
14.00 Recreation Facilities								
14.00.23	Site Grading and Landscaping	1.00	EA	10,778	0	8,343	19,121	19121
	Recreation Facilities	1.00	EA	10,778	0	8,343	19,121	19121
	RECREATION FACILITIES	1.00	EA	10,778	0	8,343	19,121	19121
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation	10.00	EA	2740551	0	0	2,740,551	274055
	General Design Memorandum	1.00	EA	2740551	0	0	2,740,551	2740551
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	2740551	0	0	2,740,551	2740551
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11	Supervision and Administration	1.00	EA	859,372	0	0	859,372	859372
	Construction Contracts	1.00	EA	859,372	0	0	859,372	859372
	CONSTRUCTION MANAGEMENT	1.00	EA	859,372	0	0	859,372	859372
	Lis/Tpk/Dor-Sect A, Project Cost	1.00	EA	8651179	379,653	7332665	16,363,497	16363497
	Prime Contractor's Field Overhead						912,363	

PROJECT LTD_1A: Lis/Tpk/Dor-Sect A, Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 8

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
SUBTOTAL						17,275,861	
Prime's Home Office Expense						430,228	
SUBTOTAL						17,706,089	
Prime Contractor's Profit						813,777	
SUBTOTAL						18,519,866	
Prime Contractor's Bond						59,248	
SUBTOTAL						18,579,114	
Insurance and Permits						98,433	
TOTAL INCL INDIRECTS						18,677,547	
Contingency						2,976,908	
TOTAL INCL OWNER COSTS						21,654,455	

ATTACHMENT M-CACES

DA - 16

DOREMUS AVE. LEVEE/FLOODWALL SYSTEM -Section B

Lis/Tpk/Dor-Sect B, Project Cost
Passaic River
Flood Damage Reduction Project
Lister/Tpke/Doremus - Section B
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: The RBA Group

Prepared By: The RBA Group
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/02/95
Est Construction Time: 567 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01	LANDS AND DAMAGES						
01.20	General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	1,659,779	248,967	1,908,746	1908746
	General Design Memorandum	1.00	EA	1,659,779	248,967	1,908,746	1908746
	LANDS AND DAMAGES	1.00	EA	1,659,779	248,967	1,908,746	1908746
02	RELOCATIONS						
02.03	Cemetery, Utilities, & Structuer						
02.03.18	Utilities	1.00	EA	252,494	35,000	287,494	287494
	Cemetery, Utilities, & Structuer	1.00	EA	252,494	35,000	287,494	287494
	RELOCATIONS	1.00	EA	252,494	35,000	287,494	287494
11	LEVEES AND FLOODWALLS						
11.00	Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	55,927	8,300	64,227	64227
11.00.02	Traffic Control	1.00	EA	159,970	25,000	184,970	184970
11.00.03	Erosion Control	1.00	EA	35,572	5,500	41,072	41072
11.00.04	Clearing and Grubbing	1.00	EA	27,400	4,500	31,900	31900
11.00.05	Excavating and Embankment	1.00	EA	193,471	28,000	221,471	221471
11.00.07	Closure Structures			2,091,265	494,000	2,585,265	
11.00.08	Interior Drainage			325,486	60,000	385,486	
11.00.09	Box Piling	170.00	LF	378,998	65,000	443,998	2611.75
11.00.10	Relocate Dolphins			3,585	750	4,335	
11.00.11	Interior Line of Protection			199,168	30,000	229,168	
	Associated General Items	1.00	EA	3,470,842	721,050	4,191,892	4191892
11.01	Levees						
11.01.01	Excavation and Embankment	1.00	EA	37,392	5,750	43,142	43142
	Levees	1.00	EA	37,392	5,750	43,142	43142
11.02	Floodwall						
11.02.01	Excavation and Embankment	1.00	EA	122,247	16,500	138,747	138747

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
11.02.02	Concrete Wall Erection	1.00	EA	4,679,568	710,000	5,389,568	5389568
	Floodwall	1.00	EA	4,801,816	726,500	5,528,316	5528316
	LEVEES AND FLOODWALLS	1.00	EA	8,310,050	1453300	9,763,350	9763350
30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation	10.00	EA	2,056,512	259,157	2,315,669	231567
	General Design Memorandum	1.00	EA	2,056,512	259,157	2,315,669	2315669
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	2,056,512	259,157	2,315,669	2315669
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration	1.00	EA	642,191	96,329	738,520	738520
	Construction Contracts	1.00	EA	642,191	96,329	738,520	738520
	CONSTRUCTION MANAGEMENT	1.00	EA	642,191	96,329	738,520	738520
	Lis/Tpk/Dor-Sect B, Project Cost	1.00	EA	12,921,026	2092753	15,013,779	15013779

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	1,659,779	0	0	0	0	0	1,659,779	1659779
	General Design Memorandum	1.00	EA	1,659,779	0	0	0	0	0	1,659,779	1659779
	LANDS AND DAMAGES	1.00	EA	1,659,779	0	0	0	0	0	1,659,779	1659779
02 RELOCATIONS											
02.03 Cemetery, Utilities, & Structuer											
02.03.18	Utilities	1.00	EA	196,500	26,904	8,936	16,903	1,286	1,965	252,494	252494
	Cemetery, Utilities, & Structuer	1.00	EA	196,500	26,904	8,936	16,903	1,286	1,965	252,494	252494
	RELOCATIONS	1.00	EA	196,500	26,904	8,936	16,903	1,286	1,965	252,494	252494
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	43,525	5,959	1,979	3,744	285	435	55,927	55927
11.00.02	Traffic Control	1.00	EA	124,495	17,045	5,662	10,709	815	1,245	159,970	159970
11.00.03	Erosion Control	1.00	EA	27,684	3,790	1,259	2,381	181	277	35,572	35572
11.00.04	Clearing and Grubbing	1.00	EA	21,324	2,920	970	1,834	140	213	27,400	27400
11.00.05	Excavating and Embankment	1.00	EA	150,566	20,615	6,847	12,952	985	1,506	193,471	193471
11.00.07	Closure Structures			1,627,500	222,830	74,013	139,996	10,651	16,275	2,091,265	
11.00.08	Interior Drainage			253,305	34,681	11,519	21,789	1,658	2,533	325,486	
11.00.09	Box Piling	170.00	LF	294,950	40,383	13,413	25,371	1,930	2,950	378,998	2229.40
11.00.10	Relocate Dolphins			2,790	382	127	240	18	28	3,585	
11.00.11	Interior Line of Protection			155,000	21,222	7,049	13,333	1,014	1,550	199,168	
	Associated General Items	1.00	EA	2,701,138	369,828	122,839	232,349	17,677	27,011	3,470,842	3470842
11.01 Levees											
11.01.01	Excavation and Embankment	1.00	EA	29,100	3,984	1,323	2,503	190	291	37,392	37392
	Levees	1.00	EA	29,100	3,984	1,323	2,503	190	291	37,392	37392
11.02 Floodwall											
11.02.01	Excavation and Embankment	1.00	EA	95,137	13,026	4,327	8,184	623	951	122,247	122247

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

11.02.02	Concrete Wall Erection	1.00	EA	3,641,813	498,621	165,617	313,265	23,833	36,418	4,679,568	4679568
	Floodwall	1.00	EA	3,736,950	511,647	169,944	321,449	24,456	37,370	4,801,816	4801816
	LEVEES AND FLOODWALLS	1.00	EA	6,467,188	885,459	294,106	556,301	42,323	64,672	8,310,050	8310050
30 PLANNING, ENGINEERING AND DESIGN											
30.20 General Design Memorandum											
30.20.08	Final Report Documentation	10.00	EA	2,056,512	0	0	0	0	0	2,056,512	205651
	General Design Memorandum	1.00	EA	2,056,512	0	0	0	0	0	2,056,512	2056512
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	2,056,512	0	0	0	0	0	2,056,512	2056512
31 CONSTRUCTION MANAGEMENT											
31.23 Construction Contracts											
31.23.11	Supervision and Administration	1.00	EA	642,191	0	0	0	0	0	642,191	6421
	Construction Contracts	1.00	EA	642,191	0	0	0	0	0	642,191	642191
	CONSTRUCTION MANAGEMENT	1.00	EA	642,191	0	0	0	0	0	642,191	642191
	Lis/Tpk/Dor-Sect B, Project Cost	1.00	EA	11,022,170	912,363	303,042	573,204	43,609	66,637	12,921,026	12921026
	Contingency									2,092,753	
	TOTAL INCL OWNER COSTS									15,013,779	

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	1659779	0	0	1,659,779	1659779
	General Design Memorandum	1.00	EA	1659779	0	0	1,659,779	1659779
	LANDS AND DAMAGES	1.00	EA	1659779	0	0	1,659,779	1659779
02	RELOCATIONS							
02.03	Cemetery, Utilities, & Structuer							
02.03.18	Utilities	1.00	EA	0	0	196,500	196,500	196500
	Cemetery, Utilities, & Structuer	1.00	EA	0	0	196,500	196,500	196500
	RELOCATIONS	1.00	EA	0	0	196,500	196,500	196500
11	LEVEES AND FLOODWALLS							
11.00	Associated General Items							
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	29,921	13,604	0	43,525	43525
11.00.02	Traffic Control	1.00	EA	124,495	0	0	124,495	124495
11.00.03	Erosion Control	1.00	EA	19,997	3,584	4,103	27,684	27684
11.00.04	Clearing and Grubbing	1.00	EA	14,977	6,347	0	21,324	21324
11.00.05	Excavating and Embankment	1.00	EA	8,205	2,131	140,230	150,566	150566
11.00.07	Closure Structures			0	0	1627500	1,627,500	
11.00.08	Interior Drainage			0	0	253,305	253,305	
11.00.09	Box Piling	170.00	LF	0	0	294,950	294,950	1735.00
11.00.10	Relocate Dolphins			810	0	1,980	2,790	
11.00.11	Interior Line of Protection			0	0	155,000	155,000	
	Associated General Items	1.00	EA	198,404	25,665	2477068	2,701,138	2701138
11.01	Levees							
11.01.01	Excavation and Embankment	1.00	EA	10,648	9,412	9,040	29,100	29100
	Levees	1.00	EA	10,648	9,412	9,040	29,100	29100
11.02	Floodwall							
11.02.01	Excavation and Embankment	1.00	EA	22,111	6,786	66,240	95,137	95137

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
11.02.02	Concrete Wall Erection	1.00	EA	1288004	173,666	2180144	3,641,813	3641813
	Floodwall	1.00	EA	1310115	180,452	2246384	3,736,950	3736950
	LEVEES AND FLOODWALLS	1.00	EA	1519167	215,529	4732492	6,467,188	6467188
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation	10.00	EA	2056512	0	0	2,056,512	205651
	General Design Memorandum	1.00	EA	2056512	0	0	2,056,512	2056512
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	2056512	0	0	2,056,512	2056512
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration	1.00	EA	642,191	0	0	642,191	6421
	Construction Contracts	1.00	EA	642,191	0	0	642,191	642191
	CONSTRUCTION MANAGEMENT	1.00	EA	642,191	0	0	642,191	642191
	Lis/Tpk/Dor-Sect B, Project Cost	1.00	EA	5877649	215,529	4928992	11,022,170	11022170
	Prime Contractor's Field Overhead						912,363	
	SUBTOTAL						11,934,533	
	Prime's Home Office Expense						303,042	
	SUBTOTAL						12,237,576	
	Prime Contractor's Profit						573,204	
	SUBTOTAL						12,810,780	
	Prime Contractor's Bond						43,609	
	SUBTOTAL						12,854,389	
	Insurance and Permits						66,637	
	TOTAL INCL INDIRECTS						12,921,026	
	Contingency						2,092,753	
	TOTAL INCL OWNER COSTS						15,013,779	

ATTACHMENT M-CACES

DA - 17

SOUTH 1ST STREET LEVEE/FLOODWALL SYSTEM

Thu 03 Aug 1995

U.S. Army Corps of Engineers
PROJECT S01STP: South First Street Project Cost - Passaic River
FINAL ESTIMATE

TIME 14:47:24

TITLE PAGE 1

South First Street Project Cost
Passaic River
Flood Damage Reduction Project
South First Street
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: The RBA Group

Prepared By: The RBA Group
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/23/95
Est Construction Time: 294 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

Thu 03 Aug 1995

U.S. Army Corps of Engineers

TIME 14:47:24

PROJECT SOLSTP: South First Street Project Cost - Passaic River

TABLE OF CONTENTS

FINAL ESTIMATE

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	6

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01 LANDS AND DAMAGES						
01.20 General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	2,949,197	442,380	3,391,577 3391577
	General Design Memorandum	1.00	EA	2,949,197	442,380	3,391,577 3391577
	LANDS AND DAMAGES	1.00	EA	2,949,197	442,380	3,391,577 3391577
02 RELOCATIONS						
02.03 Cemetery, Utilities, & Structure						
02.03.18	Utilities	1.00	EA	167,728	25,000	192,728 192728
	Cemetery, Utilities, & Structure	1.00	EA	167,728	25,000	192,728 192728
	RELOCATIONS	1.00	EA	167,728	25,000	192,728 192728
11 LEVEES AND FLOODWALLS						
11.00 Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	50,085	7,800	57,885 57885
11.00.02	Traffic Control	1.00	EA	77,683	11,000	88,683 88683
11.00.03	Erosion Control	1.00	EA	27,119	4,000	31,119 31119
11.00.04	Clearing and Grubbing	1.00	EA	13,898	2,000	15,898 15898
11.00.05	Excavating and Embankment	1.00	EA	167,210	24,500	191,710 191710
11.00.07	Closure Structures			1,038,939	146,000	1,184,939
11.00.08	Interior Drainage			231,891	39,000	270,891
11.00.09	Green Acres Mitigation			932	140	1,072
11.00.10	Beautification			31,577	4,737	36,313
	Associated General Items	1.00	EA	1,639,334	239,176	1,878,510 1878510
11.01 Levees						
11.01.01	Excavation and Embankment	1.00	EA	139,298	19,000	158,298 158298
11.01.02	Drainage	1.00	EA	17,427	2,600	20,027 20027
	Levees	1.00	EA	156,725	21,600	178,325 178325
11.02 Floodwall						
11.02.01	Excavation and Embankment	1.00	EA	68,346	10,500	78,846 78846

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
11.02.02	Concrete Wall Erection	1.00	EA	2,728,171	450,000	3,178,171	3178171
	Floodwall	1.00	EA	2,796,516	460,500	3,257,016	3257016
	LEVEES AND FLOODWALLS	1.00	EA	4,592,575	721,276	5,313,851	5313851
13	PUMPING PLANT						
13.00	Pumping Plant						
13.00.99	Associated General Items	1.00	EA	1,060,779	150,000	1,210,779	1210779
	Pumping Plant	1.00	EA	1,060,779	150,000	1,210,779	1210779
	PUMPING PLANT	1.00	EA	1,060,779	150,000	1,210,779	1210779
14	RECREATION						
14.00	Recreation Facilities						
14.00.99	Associated General Items	1.00	EA	3,600	540	4,140	4140.
	Recreation Facilities	1.00	EA	3,600	540	4,140	4140.00
	RECREATION	1.00	EA	3,600	540	4,140	4140.00
30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation			1,875,570	248,353	2,123,923	
	General Design Memorandum	1.00	EA	1,875,570	248,353	2,123,923	2123923
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,875,570	248,353	2,123,923	2123923
31	CONSTRUCTION MANAGEMENT						
31.20	Construction Contracts						
31.20.11	Supervision and Administration	1.00	EA	436,851	65,528	502,379	502379
	Construction Contracts	1.00	EA	436,851	65,528	502,379	502379
	CONSTRUCTION MANAGEMENT	1.00	EA	436,851	65,528	502,379	5023
	South First Street Project Cost	1.00	EA	11,086,300	1,653,077	12,739,377	12739377

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	2,949,197	0	0	0	0	0	2,949,197	2949197

	General Design Memorandum	1.00	EA	2,949,197	0	0	0	0	0	2,949,197	2949197

	LANDS AND DAMAGES	1.00	EA	2,949,197	0	0	0	0	0	2,949,197	2949197
02 RELOCATIONS											
02.03 Cemetery, Utilities, & Structure											
02.03.18	Utilities	1.00	EA	134,400	13,883	5,931	11,219	950	1,344	167,728	167728

	Cemetery, Utilities, & Structure	1.00	EA	134,400	13,883	5,931	11,219	950	1,344	167,728	167728

	RELOCATIONS	1.00	EA	134,400	13,883	5,931	11,219	950	1,344	167,728	167728
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	40,133	4,146	1,771	3,350	284	401	50,085	50085
11.00.02	Traffic Control	1.00	EA	62,247	6,430	2,747	5,196	440	622	77,683	77683
11.00.03	Erosion Control	1.00	EA	21,730	2,245	959	1,814	154	217	27,119	27119
11.00.04	Clearing and Grubbing	1.00	EA	11,136	1,150	491	930	79	111	13,898	13898
11.00.05	Excavating and Embankment	1.00	EA	133,985	13,840	5,913	11,184	947	1,340	167,210	167210
11.00.07	Closure Structures			832,500	85,995	36,740	69,493	5,886	8,325	1,038,939	
11.00.08	Interior Drainage			185,814	19,194	8,200	15,511	1,314	1,858	231,891	
11.00.09	Green Acres Mitigation			932	0	0	0	0	0	932	
11.00.10	Beautification			31,577	0	0	0	0	0	31,577	

	Associated General Items	1.00	EA	1,320,054	133,000	56,822	107,478	9,104	12,875	1,639,334	1639334
11.01 Levees											
11.01.01	Excavation and Embankment	1.00	EA	111,619	11,530	4,926	9,317	789	1,116	139,298	139298
11.01.02	Drainage	1.00	EA	13,964	1,442	616	1,166	99	140	17,427	17427

	Levees	1.00	EA	125,583	12,972	5,542	10,483	888	1,256	156,725	156725
11.02 Floodwall											
11.02.01	Excavation and Embankment	1.00	EA	54,765	5,657	2,417	4,572	387	548	68,346	68346

PROJECT S01STP: South First Street Project Cost - Passaic River

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

11.02.02	Concrete Wall Erection	1.00	EA	2,186,078	225,816	96,476	182,484	15,457	21,861	2,728,171	2728171
	Floodwall	1.00	EA	2,240,843	231,473	98,893	187,055	15,844	22,408	2,796,516	2796516
	LEVEES AND FLOODWALLS	1.00	EA	3,686,480	377,446	161,257	305,017	25,835	36,540	4,592,575	4592575
13 PUMPING PLANT											
13.00 Pumping Plant											
13.00.99	Associated General Items	1.00	EA	850,000	87,803	37,512	70,954	6,010	8,500	1,060,779	1060779
	Pumping Plant	1.00	EA	850,000	87,803	37,512	70,954	6,010	8,500	1,060,779	1060779
	PUMPING PLANT	1.00	EA	850,000	87,803	37,512	70,954	6,010	8,500	1,060,779	1060779
14 RECREATION											
14.00 Recreation Facilities											
14.00.99	Associated General Items	1.00	EA	3,600	0	0	0	0	0	3,600	3600.0
	Recreation Facilities	1.00	EA	3,600	0	0	0	0	0	3,600	3600.00
	RECREATION	1.00	EA	3,600	0	0	0	0	0	3,600	3600.00
30 PLANNING, ENGINEERING AND DESIGN											
30.20 General Design Memorandum											
30.20.08	Final Report Documentation			1,875,570	0	0	0	0	0	1,875,570	
	General Design Memorandum	1.00	EA	1,875,570	0	0	0	0	0	1,875,570	1875570
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,875,570	0	0	0	0	0	1,875,570	1875570
31 CONSTRUCTION MANAGEMENT											
31.20 Construction Contracts											
31.20.11	Supervision and Administration	1.00	EA	436,851	0	0	0	0	0	436,851	436851
	Construction Contracts	1.00	EA	436,851	0	0	0	0	0	436,851	436851
	CONSTRUCTION MANAGEMENT	1.00	EA	436,851	0	0	0	0	0	436,851	43685
	South First Street Project Cost	1.00	EA	9,936,098	479,132	204,700	387,190	32,796	46,384	11,086,300	11086300

Thu 03 Aug 1995

U.S. Army Corps of Engineers

TIME 14:47:24

PROJECT SOLSTP: South First Street Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 5

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	COST	UNIT
Contingency											1,653,077	
TOTAL INCL OWNER COSTS											12,739,377	

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	2,949,197	0	0	2,949,197	2949197
				-----	-----	-----	-----	
	General Design Memorandum	1.00	EA	2,949,197	0	0	2,949,197	2949197
				-----	-----	-----	-----	
	LANDS AND DAMAGES	1.00	EA	2,949,197	0	0	2,949,197	2949197
02	RELOCATIONS							
02.03	Cemetery, Utilities, & Structure							
02.03.18	Utilities	1.00	EA	12,000	4,000	118,400	134,400	134400
				-----	-----	-----	-----	
	Cemetery, Utilities, & Structure	1.00	EA	12,000	4,000	118,400	134,400	134400
				-----	-----	-----	-----	
	RELOCATIONS	1.00	EA	12,000	4,000	118,400	134,400	134400
11	LEVEES AND FLOODWALLS							
11.00	Associated General Items							
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	27,615	12,518	0	40,133	40133
11.00.02	Traffic Control	1.00	EA	62,247	0	0	62,247	62247
11.00.03	Erosion Control	1.00	EA	17,037	1,197	3,496	21,730	21730
11.00.04	Clearing and Grubbing	1.00	EA	7,822	3,314	0	11,136	11136
11.00.05	Excavating and Embankment	1.00	EA	7,302	1,896	124,787	133,985	133985
11.00.07	Closure Structures			0	0	832,500	832,500	
11.00.08	Interior Drainage			0	0	185,814	185,814	
11.00.09	Green Acres Mitigation			0	0	932	932	
11.00.10	Beautification			8,937	0	22,640	31,577	
				-----	-----	-----	-----	
	Associated General Items	1.00	EA	130,960	18,925	1,170,169	1,320,054	1320054
11.01	Levees							
11.01.01	Excavation and Embankment	1.00	EA	33,174	32,729	45,716	111,619	111619
11.01.02	Drainage	1.00	EA	1,181	383	12,400	13,964	13964
				-----	-----	-----	-----	
	Levees	1.00	EA	34,355	33,112	58,116	125,583	125583
11.02	Floodwall							
11.02.01	Excavation and Embankment	1.00	EA	14,122	5,123	35,520	54,765	54765

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
11.02.02	Concrete Wall Erection	1.00	EA	736,560	108,921	1,340,597	2,186,078	2186078
	Floodwall	1.00	EA	750,681	114,044	1,376,117	2,240,843	2240843
	LEVEES AND FLOODWALLS	1.00	EA	915,996	166,081	2,604,402	3,686,480	3686480
13	PUMPING PLANT							
13.00	Pumping Plant							
13.00.99	Associated General Items	1.00	EA	0	0	850,000	850,000	850000
	Pumping Plant	1.00	EA	0	0	850,000	850,000	850000
	PUMPING PLANT	1.00	EA	0	0	850,000	850,000	850000
14	RECREATION							
14.00	Recreation Facilities							
14.00.99	Associated General Items	1.00	EA	2,340	0	1,260	3,600	3600.00
	Recreation Facilities	1.00	EA	2,340	0	1,260	3,600	3600.00
	RECREATION	1.00	EA	2,340	0	1,260	3,600	3600.00
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation			1,875,570	0	0	1,875,570	
	General Design Memorandum	1.00	EA	1,875,570	0	0	1,875,570	1875570
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,875,570	0	0	1,875,570	1875570
31	CONSTRUCTION MANAGEMENT							
31.20	Construction Contracts							
31.20.11	Supervision and Administration	1.00	EA	436,851	0	0	436,851	436851
	Construction Contracts	1.00	EA	436,851	0	0	436,851	436851
	CONSTRUCTION MANAGEMENT	1.00	EA	436,851	0	0	436,851	436851
	South First Street Project Cost	1.00	EA	6,191,954	170,081	3,574,062	9,936,098	9936098

PROJECT SOLSTP: South First Street Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 8

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
Prime Contractor's Field Overhead						479,132	
SUBTOTAL						10,415,230	
Prime's Home Office Expense						204,700	
SUBTOTAL						10,619,930	
Prime Contractor's Profit						387,190	
SUBTOTAL						11,007,120	
Prime Contractor's Bond						32,796	
SUBTOTAL						11,039,916	
Insurance and Permits						46,384	
TOTAL INCL INDIRECTS						11,086,300	
Contingency						1,653,077	
TOTAL INCL OWNER COSTS						12,739,377	

ATTACHMENT M-CACES

DA - 18

PINCH BROOK LEVEE/FLOODWALL SYSTEM

Pinch Brook Project Cost
Passaic River
Flood Damage Reduction Project
Pinch Brook
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: ARORA and ASSOCIATES, P.C.

Prepared By: Joseph S. Levin, Arora & Assoc.
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 05/10/95
Est Construction Time: 126 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01 LANDS AND DAMAGES						
01.20 General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00 EA	167,943	25,191	193,134	193134
	General Design Memorandum	1.00 EA	167,943	25,191	193,134	193134
	LANDS AND DAMAGES	1.00 EA	167,943	25,191	193,134	193134
11 LEVEES AND FLOODWALLS						
11.00 Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00 EA	57,340	8,500	65,840	65840
11.00.02	Traffic Control	1.00 EA	50,464	8,000	58,464	58464
11.00.03	Erosion Control	1.00 EA	13,124	2,000	15,124	15124
11.00.04	Clearing and Grubbing	1.00 EA	24,106	4,000	28,106	28106
11.00.05	Excavating and Embankment	1.00 EA	36,906	6,000	42,906	42906
11.00.06	Interior Drainage	1.00 EA	74,244	6,000	80,244	80244
11.00.07	Beautification	1.00 EA	36,724	5,509	42,233	42233
	Associated General Items	1.00 EA	292,909	40,009	332,917	332917
11.01 Levees						
11.01.01	Excavation and Embankment	1.00 EA	331,360	49,600	380,960	380960
11.01.02	Drainage	1.00 EA	8,583	1,200	9,783	9783.30
11.01.03	Rip Rap Slope Protection	10.20 CY	1,814	250	2,064	202.36
11.01.04	Utility Sleeving	1.00 EA	5,388	750	6,138	6138.05
	Levees	1.00 EA	347,145	51,800	398,945	398945
11.02 Floodwall						
11.02.01	Excavation and Embankment	1.00 EA	6,646	1,050	7,696	7696.13
11.02.02	Concrete Wall Erection	1.00 EA	336,092	49,000	385,092	385092
	Floodwall	1.00 EA	342,738	50,050	392,788	392788
	LEVEES AND FLOODWALLS	1.00 EA	982,792	141,859	1,124,650	1124650
13 PUMPING PLANT						
13.00 Pumping Plant						

PROJECT PINCHB: Pinch Brook Project Cost - Passaic River

FINAL ESTIMATE

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
13.00.99	Associated General Items	1.00	EA	112,251	17,000	129,251	129251
	Pumping Plant	1.00	EA	112,251	17,000	129,251	129251
	PUMPING PLANT	1.00	EA	112,251	17,000	129,251	129251
30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation			273,761	34,911	308,672	
	General Design Memorandum	1.00	EA	273,761	34,911	308,672	308672
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	273,761	34,911	308,672	308672
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration			82,129	12,319	94,448	
	Construction Contracts	1.00	EA	82,129	12,319	94,448	94448
	CONSTRUCTION MANAGEMENT	1.00	EA	82,129	12,319	94,448	94448
	Pinch Brook Project Cost	1.00	EA	1,618,876	231,280	1,850,156	1850156

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	167,943	0	0	0	0	0	167,943	167943
	General Design Memorandum	1.00	EA	167,943	0	0	0	0	0	167,943	167943
	LANDS AND DAMAGES	1.00	EA	167,943	0	0	0	0	0	167,943	167943
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	38,311	11,860	2,007	4,372	406	383	57,340	57340
11.00.02	Traffic Control	1.00	EA	33,717	10,437	1,766	3,848	358	337	50,464	50464
11.00.03	Erosion Control	1.00	EA	8,768	2,714	459	1,001	93	88	13,124	13124
11.00.04	Clearing and Grubbing	1.00	EA	16,107	4,986	844	1,838	171	161	24,106	24106
11.00.05	Excavating and Embankment	1.00	EA	24,659	7,633	1,292	2,814	262	247	36,906	36906
11.00.06	Interior Drainage	1.00	EA	49,606	15,356	2,598	5,662	526	496	74,244	74244
11.00.07	Beautification	1.00	EA	36,724	0	0	0	0	0	36,724	36724
	Associated General Items	1.00	EA	207,893	52,987	8,966	19,536	1,816	1,712	292,909	292909
11.01 Levees											
11.01.01	Excavation and Embankment	1.00	EA	221,397	68,535	11,597	25,268	2,349	2,214	331,360	331360
11.01.02	Drainage	1.00	EA	5,735	1,775	300	655	61	57	8,583	8583.30
11.01.03	Rip Rap Slope Protection	10.20	CY	1,212	375	63	138	13	12	1,814	177.85
11.01.04	Utility Sleeving	1.00	EA	3,600	1,114	189	411	38	36	5,388	5388.05
	Levees	1.00	EA	231,944	71,800	12,150	26,472	2,461	2,319	347,145	347145
11.02 Floodwall											
11.02.01	Excavation and Embankment	1.00	EA	4,441	1,375	233	507	47	44	6,646	6646.13
11.02.02	Concrete Wall Erection	1.00	EA	224,558	69,514	11,763	25,629	2,382	2,246	336,092	336092
	Floodwall	1.00	EA	228,999	70,888	11,995	26,136	2,429	2,290	342,738	342738
	LEVEES AND FLOODWALLS	1.00	EA	668,835	195,675	33,111	72,143	6,706	6,321	982,792	982792
13 PUMPING PLANT											
13.00 Pumping Plant											

PROJECT PINCHB: Pinch Brook Project Cost - Passaic River

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT
13.00.99	Associated General Items	1.00	EA	75,000	23,217	3,929	8,560	796	750	112,251	112251	
	Pumping Plant	1.00	EA	75,000	23,217	3,929	8,560	796	750	112,251	112251	
	PUMPING PLANT	1.00	EA	75,000	23,217	3,929	8,560	796	750	112,251	112251	
30	PLANNING, ENGINEERING AND DESIGN											
30.20	General Design Memorandum											
30.20.08	Final Report Documentation			273,761	0	0	0	0	0	273,761		
	General Design Memorandum	1.00	EA	273,761	0	0	0	0	0	273,761	273761	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	273,761	0	0	0	0	0	273,761	273761	
31	CONSTRUCTION MANAGEMENT											
31.23	Construction Contracts											
31.23.11	Supervision and Administration			82,129	0	0	0	0	0	82,129		
	Construction Contracts	1.00	EA	82,129	0	0	0	0	0	82,129	82129	
	CONSTRUCTION MANAGEMENT	1.00	EA	82,129	0	0	0	0	0	82,129	82129	
	Pinch Brook Project Cost Contingency	1.00	EA	1,267,668	218,892	37,040	80,703	7,502	7,071	1,618,876	1618876	
	TOTAL INCL OWNER COSTS									231,280		
										1,850,156		

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00	EA	167,943	0	0	167,943	167943
	General Design Memorandum	1.00	EA	167,943	0	0	167,943	167943
	LANDS AND DAMAGES	1.00	EA	167,943	0	0	167,943	167943

11 LEVEES AND FLOODWALLS								
11.00 Associated General Items								
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	23,583	14,728	0	38,311	38311
11.00.02	Traffic Control	1.00	EA	33,717	0	0	33,717	33717
11.00.03	Erosion Control	1.00	EA	6,879	482	1,408	8,768	8768.44
11.00.04	Clearing and Grubbing	1.00	EA	10,044	6,062	0	16,107	16107
11.00.05	Excavating and Embankment	1.00	EA	11,224	8,287	5,148	24,659	24659
11.00.06	Interior Drainage	1.00	EA	7,234	1,280	41,092	49,606	49606
11.00.07	Beautification	1.00	EA	9,293	0	27,431	36,724	36724
	Associated General Items	1.00	EA	101,976	30,839	75,078	207,893	207893

11.01 Levees								
11.01.01	Excavation and Embankment	1.00	EA	51,766	48,601	121,030	221,397	221397
11.01.02	Drainage	1.00	EA	978	356	4,401	5,735	5734.89
11.01.03	Rip Rap Slope Protection	10.20	CY	720	300	191	1,212	118.83
11.01.04	Utility Sleevng	1.00	EA	0	0	3,600	3,600	3600.00
	Levees	1.00	EA	53,464	49,257	129,222	231,944	231944

11.02 Floodwall								
11.02.01	Excavation and Embankment	1.00	EA	1,145	415	2,880	4,441	4440.58
11.02.02	Concrete Wall Erection	1.00	EA	84,667	12,650	127,241	224,558	224558
	Floodwall	1.00	EA	85,813	13,066	130,121	228,999	228999
	LEVEES AND FLOODWALLS	1.00	EA	241,252	93,162	334,421	668,835	668835

13 PUMPING PLANT								
13.00 Pumping Plant								

U.S. Army Corps of Engineers
 PROJECT PINCHB: Pinch Brook Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
13.00.99	Associated General Items	1.00	EA	0	0	75,000	75,000	75000
	Pumping Plant	1.00	EA	0	0	75,000	75,000	75000
	PUMPING PLANT	1.00	EA	0	0	75,000	75,000	75000
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation			273,761	0	0	273,761	
	General Design Memorandum	1.00	EA	273,761	0	0	273,761	273761
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	273,761	0	0	273,761	273761
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration			82,129	0	0	82,129	
	Construction Contracts	1.00	EA	82,129	0	0	82,129	82129
	CONSTRUCTION MANAGEMENT	1.00	EA	82,129	0	0	82,129	82129
	Pinch Brook Project Cost	1.00	EA	765,085	93,162	409,421	1,267,668	1267668
	Prime Contractor's Field Overhead						218,892	
	SUBTOTAL						1,486,560	
	Prime's Home Office Expense						37,040	
	SUBTOTAL						1,523,600	
	Prime Contractor's Profit						80,703	
	SUBTOTAL						1,604,303	
	Prime Contractor's Bond						7,502	
	SUBTOTAL						1,611,805	
	Insurance and Permits						7,071	
	TOTAL INCL INDIRECTS						1,618,876	
	Contingency						231,280	
	TOTAL INCL OWNER COSTS						1,850,156	

ATTACHMENT M-CACES

DA - 19

PASSAIC RIVER CHANNEL MODIFICATION

Passaic R Channel Project Cost
Passaic River
Flood Damage Reduction Project
Passaic River
Channel Modification

Designed By: Tech Eng Br, CENAN-PR-T
Estimated By: Associated Cost Engineers, Inc.

Prepared By: Bill Porter-Carlton, ACE
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/26/95
Est Construction Time: 252 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

PROJECT PASRIV: Passaic R Channel Project Cost - Passaic River
FINAL ESTIMATE

TABLE OF CONTENTS

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	2
PROJECT DIRECT SUMMARY - LEVEL 3.....	3

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

PASSIAC RIVER CHANNEL MODIFICATIONS

NOTES, QUALIFICATIONS AND ASSUMPTIONS

SCOPE OF WORK:

The Passiac River (Reach #7 &15) is part of the Passaic River Flood Damage Reduction Project. The total improvement length is 4,570 linear feet at a depth of cut from 0 to 7 feet. The bottom width varies from 50 feet to 74 feet. A total of 271,494 cubic yards will be removed from the river. A temporary easement 20' wide times the 4,570 linear footage of the improvement (91,400 square feet or 2.01 acres) needs to be cleared on one side of the river for equipment access. The equipment consists of the crane with dragline equipment and the trucks used to remove the spoils. After the dredging is completed, the area will be graded and seeded.

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	CST	UNIT

01 LANDS AND DAMAGES								
01_20 General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	27,793	5,559	33,352		33352
	General Design Memorandum	1.00	EA	27,793	5,559	33,352		33352
	LANDS AND DAMAGES	1.00	EA	27,793	5,559	33,352		33352
09 CHANNELS AND CANALS								
09_01 Channels								
09_01.01	Mob, Demob & Preparatory Work	4570.00	LF	10,464	2,038	12,502		2.74
09_01.13	Traffic Control	4570.00	LF	103,897	20,237	124,134		27.16
09_01.15	Mechanical Dredging	273586.46	LF	2,669,205	519,901	3,189,106		11.66
09_01.AA	Bank Stabilize, Dikes & Jetties	4570.00	LF	296,867	57,823	354,690		77.61
	Channels	1.00	EA	3,080,433	599,999	3,680,432		3680432
	CHANNELS AND CANALS	1.00	EA	3,080,433	599,999	3,680,432		3680432
30 PLANNING, ENGINEERING AND DESIGN								
30_20 General Design Memorandum								
30_20.08	Final Report Documentation			910,304	118,486	1,028,790		
	General Design Memorandum	1.00	EA	910,304	118,486	1,028,790		1028790
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	910,304	118,486	1,028,790		1028790
31 CONSTRUCTION MANAGEMENT								
31_23 Construction Contracts								
31_23.11	Supervision and Administration			231,032	34,655	265,687		
	Construction Contracts	1.00	EA	231,032	34,655	265,687		265687
	CONSTRUCTION MANAGEMENT	1.00	EA	231,032	34,655	265,687		265687
	Passaic R Channel Project Cost	1.00	EA	4,249,562	758,699	5,008,261		5008261

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNI.

01 LANDS AND DAMAGES												
01_20 General Design Memorandum												
01_20.03	Real Estate Analysis Documents	1.00	EA	27,793	0	0	0	0	0	27,793		27793
	General Design Memorandum	1.00	EA	27,793	0	0	0	0	0	27,793		27793
	LANDS AND DAMAGES	1.00	EA	27,793	0	0	0	0	0	27,793		27793
09 CHANNELS AND CANALS												
09_01 Channels												
09_01.01	Mob, Demob & Preparatory Work	4570.00	LF	8,718	523	370	694	54	104	10,464		2.29
09_01.13	Traffic Control	4570.00	LF	86,569	5,194	3,671	6,895	539	1,029	103,897		22.73
09_01.15	Mechanical Dredging	273586.46	LF	2,224,037	133,442	94,299	177,141	13,858	26,428	2,669,205		9.76
09_01.AA	Bank Stabilize, Dikes & Jetties	4570.00	LF	247,356	14,841	10,488	19,702	1,541	2,939	296,867		64.96
	Channels	1.00	EA	2,566,681	154,001	108,827	204,432	15,993	30,499	3,080,433		308043
	CHANNELS AND CANALS	1.00	EA	2,566,681	154,001	108,827	204,432	15,993	30,499	3,080,433		3080433
30 PLANNING, ENGINEERING AND DESIGN												
30_20 General Design Memorandum												
30_20.08	Final Report Documentation			910,304	0	0	0	0	0	910,304		
	General Design Memorandum	1.00	EA	910,304	0	0	0	0	0	910,304		910304
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	910,304	0	0	0	0	0	910,304		910304
31 CONSTRUCTION MANAGEMENT												
31_23 Construction Contracts												
31_23.11	Supervision and Administration			231,032	0	0	0	0	0	231,032		
	Construction Contracts	1.00	EA	231,032	0	0	0	0	0	231,032		231032
	CONSTRUCTION MANAGEMENT	1.00	EA	231,032	0	0	0	0	0	231,032		231032
	Passaic R Channel Project Cost Contingency	1.00	EA	3,735,810	154,001	108,827	204,432	15,993	30,499	4,249,562		424956
	TOTAL INCL OWNER COSTS									5,008,261		

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

01	LANDS AND DAMAGES								
01_20	General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	27,793	0	0	27,793		27793
	General Design Memorandum	1.00	EA	27,793	0	0	27,793		27793
	LANDS AND DAMAGES	1.00	EA	27,793	0	0	27,793		27793
09	CHANNELS AND CANALS								
09_01	Channels								
09_01.01	Mob, Demob & Preparatory Work	4570.00	LF	6,103	2,616	0	8,718		1.91
09_01.13	Traffic Control	4570.00	LF	83,011	3,558	0	86,569		18.94
09_01.15	Mechanical Dredging	273586.46	LF	373,310	1029968	820,759	2,224,037		8.13
09_01.AA	Bank Stabilize, Dikes & Jetties	4570.00	LF	52,141	11,739	183,476	247,356		54.13
	Channels	1.00	EA	514,564	1047881	1,004,235	2,566,681		2566681
	CHANNELS AND CANALS	1.00	EA	514,564	1047881	1,004,235	2,566,681		2566681
30	PLANNING, ENGINEERING AND DESIGN								
30_20	General Design Memorandum								
30_20.08	Final Report Documentation			910,304	0	0	910,304		
	General Design Memorandum	1.00	EA	910,304	0	0	910,304		910304
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	910,304	0	0	910,304		910304
31	CONSTRUCTION MANAGEMENT								
31_23	Construction Contracts								
31_23.11	Supervision and Administration			231,032	0	0	231,032		
	Construction Contracts	1.00	EA	231,032	0	0	231,032		231032
	CONSTRUCTION MANAGEMENT	1.00	EA	231,032	0	0	231,032		231032
	Passaic R Channel Project Cost	1.00	EA	1,683,693	1047881	1,004,235	3,735,810		3735810
	Prime Contractor's Field Overhead						154,001		
	SUBTOTAL						3,889,810		

PROJECT PASRIV: Passaic R Channel Project Cost - Passaic River

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT
Prime's Home Office Expense							108,827	
SUBTOTAL							3,998,638	
Prime Contractor's Profit							204,432	
SUBTOTAL							4,203,070	
Prime Contractor's Bond							15,993	
SUBTOTAL							4,219,063	
Insurance and Permits							30,499	
TOTAL INCL INDIRECTS							4,249,562	
Contingency							758,699	
TOTAL INCL OWNER COSTS							5,008,261	

ATTACHMENT M-CACES

DA - 20

GREAT PIECE WEIR

Mon 07 Aug 1995

U.S. Army Corps of Engineers
PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River
FINAL ESTIMATE

TIME 11:20:02

TITLE PAGE 1

Great Piece Weir Project Cost
Passaic River
Flood Damage Reduction Project
Great Piece Weir

Designed By: URS Consultants, Inc.
Estimated By: URS Consultants, Inc.

Prepared By: R. Hoffman, URS
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/02/95
Est Construction Time: 252 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River
FINAL ESTIMATE

TABLE OF CONTENTS



SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	4
PROJECT DIRECT SUMMARY - LEVEL 3.....	7

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

U.S. Army Corps of Engineers
 PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	185,812	37,162	222,974	222974
	General Design Memorandum	1.00	EA	185,812	37,162	222,974	222974
	LANDS AND DAMAGES	1.00	EA	185,812	37,162	222,974	222974

15 FLOODWAY CONTROL-DIVERSION STRUC							
15.01 Mob, Demob & Preparatory Work							
	Mob, Demob & Preparatory Work			69,876	10,000	79,876	

15.03 Care and Diversion of Water							
15.03.01	Sheet Piling			1,805,196	280,000	2,085,196	
15.03.02	Sheet Piling Excavation			30,936	5,000	35,936	
15.03.03	Coffer Cell Backfill			31,422	5,000	36,422	
15.03.04	Cell Backfill Removal			389,203	60,000	449,203	
15.03.05	Dewater Coffer Cells			2,085	300	2,385	
15.03.06	Shoring			79,018	12,000	91,018	
	Care and Diversion of Water			2,337,860	362,300	2,700,160	

15.05 Bridges, Foundations							
15.05.01	Dewater Inside Cofferdam			8,155	1,300	9,455	
15.05.02	Continuous Dewatering			157,275	25,000	182,275	
15.05.03	Sheet Piling Cutoff Wall			219,130	35,000	254,130	
15.05.04	Piles			568,968	90,000	658,968	
15.05.05	Base Fabric			1,593	250	1,843	
15.05.06	Excavate River Bottom			145,267	25,000	170,267	
15.05.07	Stone Base			2,535	400	2,935	
15.05.08	Pile Cap Mat Reinforcing			56,482	9,000	65,482	
15.05.09	Pile Cap Mat Concrete			64,961	10,000	74,961	
15.05.10	Base Slab			432,054	65,000	497,054	
	Bridges, Foundations			1,656,420	260,950	1,917,370	

15.06 Bridges, Abutments and Piers							
15.06.01	Structure Walls			327,131	50,000	377,131	

U.S. Army Corps of Engineers
 PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
Bridges, Abutments and Piers				327,131	50,000	377,131	
15.07 Bridges, Superstructure and Deck							
15.07.01	Roadway Deck			72,828	12,000	84,828	
15.07.02	Roadway Traffic Control			8,738	1,500	10,238	
Bridges, Superstructure and Deck				81,566	13,500	95,066	
15.25 Embedded Metal Work							
15.25.01	Handrail			13,255	1,500	14,755	
15.25.02	Vault Access			87,375	15,000	102,375	
Embedded Metal Work				100,630	16,500	117,130	
15.99 Associated General Items							
15.99.01	Roads			145,063	22,350	167,413	
15.99.02	Gate, Mechanical			2,172,725	350,000	2,522,725	
15.99.03	Electrical Power and Lighting			130,783	20,000	150,783	
15.99.04	Camp Lane Area Modification			174,750	26,213	200,963	
Associated General Items				2,623,321	418,562	3,041,883	
FLOODWAY CONTROL-DIVERSION STRUC				7,196,803	1,131,812	8,328,615	
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08	Final Report Documentation			1,412,550	172,000	1,584,550	
General Design Memorandum				1,412,550	172,000	1,584,550	
PLANNING, ENGINEERING AND DESIGN		1.00	EA	1,412,550	172,000	1,584,550	1584550
31 CONSTRUCTION MANAGEMENT							
31.23 Construction Contracts							
31.23.11	Supervision and Administration			526,654	78,998	605,652	
Construction Contracts				526,654	78,998	605,652	

Mon 07 Aug 1995

U.S. Army Corps of Engineers

TIME 11:20:02

PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 3

** PROJECT OWNER SUMMARY - LEVEL 3 **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
CONSTRUCTION MANAGEMENT	1.00	EA	526,654	78,998	605,652	605652
Great Piece Weir Project Cost	1.00	EA	9,321,819	1,419,973	10,741,792	10741792

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	185,812	0	0	0	0	0	185,812	185812
	General Design Memorandum	1.00	EA	185,812	0	0	0	0	0	185,812	185812
	LANDS AND DAMAGES	1.00	EA	185,812	0	0	0	0	0	185,812	185812
15 FLOODWAY CONTROL-DIVERSION STRUC											
15.01 Mob, Demob & Preparatory Work											
	Mob, Demob & Preparatory Work			59,979	2,999	1,799	4,199	300	600	69,876	
15.03 Care and Diversion of Water											
15.03.01	Sheet Piling			1,549,524	77,476	46,486	108,467	7,748	15,495	1,805,196	
15.03.02	Sheet Piling Excavation			26,555	1,328	797	1,859	133	266	30,936	
15.03.03	Coffer Cell Backfill			26,972	1,349	809	1,888	135	270	31,422	
15.03.04	Cell Backfill Removal			334,080	16,704	10,022	23,386	1,670	3,341	389,203	
15.03.05	Dewater Coffer Cells			1,790	89	54	125	9	18	2,085	
15.03.06	Shoring			67,826	3,391	2,035	4,748	339	678	79,018	
	Care and Diversion of Water			2,006,746	100,337	60,202	140,472	10,034	20,067	2,337,860	
15.05 Bridges, Foundations											
15.05.01	Dewater Inside Cofferdam			7,000	350	210	490	35	70	8,155	
15.05.02	Continuous Dewatering			135,000	6,750	4,050	9,450	675	1,350	157,275	
15.05.03	Sheet Piling Cutoff Wall			188,094	9,405	5,643	13,167	940	1,881	219,130	
15.05.04	Piles			488,384	24,419	14,652	34,187	2,442	4,884	568,968	
15.05.05	Base Fabric			1,368	68	41	96	7	14	1,593	
15.05.06	Excavate River Bottom			124,693	6,235	3,741	8,728	623	1,247	145,267	
15.05.07	Stone Base			2,176	109	65	152	11	22	2,535	
15.05.08	Pile Cap Mat Reinforcing			48,483	2,424	1,454	3,394	242	485	56,482	
15.05.09	Pile Cap Mat Concrete			55,760	2,788	1,673	3,903	279	558	64,961	
15.05.10	Base Slab			370,862	18,543	11,126	25,960	1,854	3,709	432,054	
	Bridges, Foundations			1,421,820	71,091	42,655	99,527	7,109	14,218	1,656,420	
15.06 Bridges, Abutments and Piers											
15.06.01	Structure Walls			280,800	14,040	8,424	19,656	1,404	2,808	327,131	

U.S. Army Corps of Engineers
 PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River
 FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT
Bridges, Abutments and Piers		280,800		14,040	8,424	19,656	1,404	2,808	327,131			
15.07 Bridges, Superstructure and Deck												
15.07.01	Roadway Deck	62,513		3,126	1,875	4,376	313	625	72,828			
15.07.02	Roadway Traffic Control	7,500		375	225	525	38	75	8,738			
Bridges, Superstructure and Deck		70,013		3,501	2,100	4,901	350	700	81,566			
15.25 Embedded Metal Work												
15.25.01	Handrail	11,377		569	341	796	57	114	13,255			
15.25.02	Vault Access	75,000		3,750	2,250	5,250	375	750	87,375			
Embedded Metal Work		86,377		4,319	2,591	6,046	432	864	100,630			
15.99 Associated General Items												
15.99.01	Roads	124,517		6,226	3,736	8,716	623	1,245	145,063			
15.99.02	Gate, Mechanical	1,865,000		93,250	55,950	130,550	9,325	18,650	2,172,725			
15.99.03	Electrical Power and Lighting	112,260		5,613	3,368	7,858	561	1,123	130,783			
15.99.04	Camp Lane Area Modification	150,000		7,500	4,500	10,500	750	1,500	174,750			
Associated General Items		2,251,777		112,589	67,553	157,624	11,259	22,518	2,623,321			
FLOODWAY CONTROL-DIVERSION STRUC		6,177,513		308,876	185,325	432,426	30,888	61,775	7,196,803			
30 PLANNING, ENGINEERING AND DESIGN												
30.20 General Design Memorandum												
30.20.08	Final Report Documentation	1,412,550		0	0	0	0	0	1,412,550			
General Design Memorandum		1,412,550		0	0	0	0	0	1,412,550			
PLANNING, ENGINEERING AND DESIGN		1.00 EA	1,412,550	0	0	0	0	0	1,412,550		1412550	
31 CONSTRUCTION MANAGEMENT												
31.23 Construction Contracts												
31.23.11	Supervision and Administration	526,654		0	0	0	0	0	526,654			
Construction Contracts		526,654		0	0	0	0	0	526,654			

Mon 07 Aug 1995

U.S. Army Corps of Engineers

TIME 11:20:02

PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT
CONSTRUCTION MANAGEMENT	1.00	EA	526,654	0	0	0	0	0	0	526,654	526654
Great Piece Weir Project Cost	1.00	EA	8,302,529	308,876	185,325	432,426	30,888	61,775		9,321,819	9321819
Contingency										1,419,973	
TOTAL INCL OWNER COSTS										10,741,792	

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	185,812	0	0	185,812	185812
	General Design Memorandum	1.00	EA	185,812	0	0	185,812	185812
	LANDS AND DAMAGES	1.00	EA	185,812	0	0	185,812	185812

15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work							
	Mob, Demob & Preparatory Work			38,567	12,812	8,600	59,979	

15.03	Care and Diversion of Water							
15.03.01	Sheet Piling			672,198	282,921	594,406	1,549,524	
15.03.02	Sheet Piling Excavation			24,110	2,445	0	26,555	
15.03.03	Coffer Cell Backfill			3,826	1,946	21,200	26,972	
15.03.04	Cell Backfill Removal			299,265	34,815	0	334,080	
15.03.05	Dewater Coffer Cells			995	119	675	1,790	
15.03.06	Shoring			48,871	12,806	6,150	67,826	
	Care and Diversion of Water			1,049,264	335,052	622,431	2,006,746	

15.05	Bridges, Foundations							
15.05.01	Dewater Inside Cofferdam			3,500	2,800	700	7,000	
15.05.02	Continuous Dewatering			75,000	60,000	0	135,000	
15.05.03	Sheet Piling Cutoff Wall			79,369	32,901	75,824	188,094	
15.05.04	Piles			168,729	68,485	251,171	488,384	
15.05.05	Base Fabric			652	28	688	1,368	
15.05.06	Excavate River Bottom			99,079	25,614	0	124,693	
15.05.07	Stone Base			416	560	1,200	2,176	
15.05.08	Pile Cap Mat Reinforcing			29,577	138	18,768	48,483	
15.05.09	Pile Cap Mat Concrete			9,344	2,557	43,860	55,760	
15.05.10	Base Slab			148,858	3,827	218,177	370,862	
	Bridges, Foundations			614,523	196,910	610,387	1,421,820	

15.06	Bridges, Abutments and Piers							
15.06.01	Structure Walls			153,161	6,755	120,883	280,800	

U.S. Army Corps of Engineers
 PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
Bridges, Abutments and Piers		153,161		6,755	120,883		280,800	
15.07 Bridges, Superstructure and Deck								
15.07.01	Roadway Deck	37,712		1,550	23,252		62,513	
15.07.02	Roadway Traffic Control	2,000		500	5,000		7,500	
Bridges, Superstructure and Deck		39,712		2,050	28,252		70,013	
15.25 Embedded Metal Work								
15.25.01	Handrail	2,486		91	8,800		11,377	
15.25.02	Vault Access	18,000		9,000	48,000		75,000	
Embedded Metal Work		20,486		9,091	56,800		86,377	
15.99 Associated General Items								
15.99.01	Roads	51,359		13,934	59,225		124,517	
15.99.02	Gate, Mechanical	125,000		50,000	1,690,000		1,865,000	
15.99.03	Electrical Power and Lighting	22,274		8,006	81,980		112,260	
15.99.04	Camp Lane Area Modification	50,000		50,000	50,000		150,000	
Associated General Items		248,633		121,940	1,881,205		2,251,777	
FLOODWAY CONTROL-DIVERSION STRUC		2,164,345		684,610	3,328,558		6,177,513	
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation	1,412,550		0	0		1,412,550	
General Design Memorandum		1,412,550		0	0		1,412,550	
PLANNING, ENGINEERING AND DESIGN		1.00 EA		1,412,550	0	0	1,412,550	1412550
31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11	Supervision and Administration	526,654		0	0		526,654	
Construction Contracts		526,654		0	0		526,654	

PROJECT GPWEIR: Great Piece Weir Project Cost - Passaic River

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
CONSTRUCTION MANAGEMENT	1.00	EA	526,654	0	0	526,654	526654
Great Piece Weir Project Cost	1.00	EA	4,289,361	684,610	3,328,558	8,302,529	8302529
Prime Contractor's Field Overhead						308,876	
SUBTOTAL						8,611,405	
Prime's Home Office Expense						185,325	
SUBTOTAL						8,796,730	
Prime Contractor's Profit						432,426	
SUBTOTAL						9,229,156	
Prime Contractor's Bond						30,888	
SUBTOTAL						9,260,044	
Insurance and Permits						61,775	
TOTAL INCL INDIRECTS						9,321,819	
Contingency						1,419,973	
TOTAL INCL OWNER COSTS						10,741,792	

ATTACHMENT M-CACES

DA - 21

PASSAIC #2A LEVEE/FLOODWALL SYSTEM

Passaic #2A Project Cost
Passaic River
Flood Damage Reduction Project
Passaic #2A
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: Arora and Associates, P.C.

Prepared By: Joseph S. Levin, Arora & Assoc.
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 05/19/95
Est Construction Time: 378 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	6

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01 LANDS AND DAMAGES						
01.20 General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	672,312	100,847	773,159 773159
	General Design Memorandum	1.00	EA	672,312	100,847	773,159 773159
	LANDS AND DAMAGES	1.00	EA	672,312	100,847	773,159 773159
02 RELOCATIONS						
02.03 Cemetery, Utilities, & Structure						
02.03.18	Utilities			15,804	2,000	17,804
	Cemetery, Utilities, & Structure			15,804	2,000	17,804
	RELOCATIONS			15,804	2,000	17,804
11 LEVEES AND FLOODWALLS						
11.00 Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	71,201	9,200	80,401 80401
11.00.02	Traffic Control	1.00	EA	109,309	15,000	124,309 124309
11.00.03	Erosion Control	1.00	EA	35,798	4,500	40,298 40298
11.00.04	Clearing and Grubbing	1.00	EA	73,418	9,750	83,168 83168
11.00.05	Excavating and Embankment	1.00	EA	553,720	76,250	629,970 629970
11.00.06	Closure Structures			144,873	20,000	164,873
11.00.07	Interior Drainage			1,437,734	189,800	1,627,534
11.00.08	Green Acres Mitigation			72,627	10,894	83,522
11.00.09	Beautification			125,717	18,857	144,574
	Associated General Items	1.00	EA	2,624,397	354,252	2,978,648 2978648
11.01 Levees						
11.01.01	Excavation and Embankment	1.00	EA	568,241	75,500	643,741 643741
	Levees	1.00	EA	568,241	75,500	643,741 643741
11.02 Floodwall						
11.02.01	Excavation and Embankment	1.00	EA	38,720	5,200	43,920 43920
11.02.02	Concrete Wall Erection	1.00	EA	1,400,867	196,000	1,596,867 1596867

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
	Floodwall	1.00	EA	1,439,587	201,200	1,640,787	1640787
	LEVEES AND FLOODWALLS	1.00	EA	4,632,224	630,952	5,263,176	5263176
13	PUMPING PLANT						
13.00	Pumping Plant						
13.00.99	Associated General Items	1.00	EA	395,108	60,000	455,108	455108
	Pumping Plant	1.00	EA	395,108	60,000	455,108	455108
	PUMPING PLANT	1.00	EA	395,108	60,000	455,108	455108
14	RECREATION FACILITIES						
14.00	Recreation Facilities						
14.00.72	Day Use Areas			146,338	21,951	168,289	
	Recreation Facilities			146,338	21,951	168,289	
	RECREATION FACILITIES			146,338	21,951	168,289	
30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation			1,458,296	189,849	1,648,145	
	General Design Memorandum	1.00	EA	1,458,296	189,849	1,648,145	1648145
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,458,296	189,849	1,648,145	1648145
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration			388,025	58,204	446,229	
	Construction Contracts	1.00	EA	388,025	58,204	446,229	446229
	CONSTRUCTION MANAGEMENT	1.00	EA	388,025	58,204	446,229	446229
	Passaic #2A Project Cost	1.00	EA	7,708,108	1,063,802	8,771,910	8771910

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	672,312	0	0	0	0	0	672,312	672312
	General Design Memorandum	1.00	EA	672,312	0	0	0	0	0	672,312	672312
	LANDS AND DAMAGES	1.00	EA	672,312	0	0	0	0	0	672,312	672312
02 RELOCATIONS											
02.03 Cemetery, Utilities, & Structure											
02.03.18	Utilities			12,000	1,890	556	1,150	89	120	15,804	
	Cemetery, Utilities, & Structure			12,000	1,890	556	1,150	89	120	15,804	
	RELOCATIONS			12,000	1,890	556	1,150	89	120	15,804	
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	54,062	8,514	2,503	5,180	401	541	71,201	71201
11.00.02	Traffic Control	1.00	EA	82,996	13,071	3,843	7,953	615	830	109,309	109309
11.00.03	Erosion Control	1.00	EA	27,181	4,281	1,258	2,605	202	272	35,798	35798
11.00.04	Clearing and Grubbing	1.00	EA	55,745	8,779	2,581	5,342	413	557	73,418	73418
11.00.05	Excavating and Embankment	1.00	EA	420,432	66,214	19,466	40,286	3,118	4,204	553,720	553720
11.00.06	Closure Structures			110,000	17,324	5,093	10,540	816	1,100	144,873	
11.00.07	Interior Drainage			1,091,651	171,925	50,543	104,604	8,095	10,917	1,437,734	
11.00.08	Green Acres Mitigation			72,627	0	0	0	0	0	72,627	
11.00.09	Beautification			125,717	0	0	0	0	0	125,717	
	Associated General Items	1.00	EA	2,040,411	290,108	85,287	176,510	13,659	18,421	2,624,397	2624397
11.01 Levees											
11.01.01	Excavation and Embankment	1.00	EA	431,457	67,950	19,976	41,343	3,199	4,315	568,241	568241
	Levees	1.00	EA	431,457	67,950	19,976	41,343	3,199	4,315	568,241	568241
11.02 Floodwall											
11.02.01	Excavation and Embankment	1.00	EA	29,399	4,630	1,361	2,817	218	294	38,720	38720
11.02.02	Concrete Wall Erection	1.00	EA	1,063,659	167,516	49,247	101,922	7,887	10,637	1,400,867	1400867

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

Floodwall	1.00	EA	1,093,058	172,146	50,608	104,739	8,105	10,931	1,439,587	1439587	
LEVEES AND FLOODWALLS	1.00	EA	3,564,927	530,205	155,872	322,592	24,963	33,666	4,632,224	4632224	
13 PUMPING PLANT											
13.00 Pumping Plant											
13.00.99 Associated General Items	1.00	EA	300,000	47,247	13,890	28,747	2,225	3,000	395,108	395108	
Pumping Plant	1.00	EA	300,000	47,247	13,890	28,747	2,225	3,000	395,108	395108	
PUMPING PLANT	1.00	EA	300,000	47,247	13,890	28,747	2,225	3,000	395,108	395108	
14 RECREATION FACILITIES											
14.00 Recreation Facilities											
14.00.72 Day Use Areas			146,338	0	0	0	0	0	146,338		
Recreation Facilities			146,338	0	0	0	0	0	146,338		
RECREATION FACILITIES			146,338	0	0	0	0	0	146,338		
30 PLANNING, ENGINEERING AND DESIGN											
30.20 General Design Memorandum											
30.20.08 Final Report Documentation			1,458,296	0	0	0	0	0	1,458,296		
General Design Memorandum	1.00	EA	1,458,296	0	0	0	0	0	1,458,296	1458296	
PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,458,296	0	0	0	0	0	1,458,296	1458296	
31 CONSTRUCTION MANAGEMENT											
31.23 Construction Contracts											
31.23.11 Supervision and Administration			388,025	0	0	0	0	0	388,025		
Construction Contracts	1.00	EA	388,025	0	0	0	0	0	388,025	388025	
CONSTRUCTION MANAGEMENT	1.00	EA	388,025	0	0	0	0	0	388,025	388025	
Passaic #2A Project Cost Contingency	1.00	EA	6,541,898	579,342	170,317	352,488	27,277	36,786	7,708,108	7708108	
									1,063,802		

Mon 07 Aug 1995

U.S. Army Corps of Engineers

TIME 14:20:34

PROJECT PAS_2A: Passaic #2A Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 5

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT
TOTAL INCL OWNER COSTS										8,771,910	

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	672,312	0	0	672,312	672312
	General Design Memorandum	1.00	EA	672,312	0	0	672,312	672312
	LANDS AND DAMAGES	1.00	EA	672,312	0	0	672,312	672312

02	RELOCATIONS							
02.03	Cemetery, Utilities, & Structure							
02.03.18	Utilities			10,000	1,000	1,000	12,000	
	Cemetery, Utilities, & Structure			10,000	1,000	1,000	12,000	
	RELOCATIONS			10,000	1,000	1,000	12,000	

11	LEVEES AND FLOODWALLS							
11.00	Associated General Items							
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	31,625	22,437	0	54,062	54062
11.00.02	Traffic Control	1.00	EA	82,996	0	0	82,996	82996
11.00.03	Erosion Control	1.00	EA	21,308	1,493	4,381	27,181	27181
11.00.04	Clearing and Grubbing	1.00	EA	35,576	20,169	0	55,745	55745
11.00.05	Excavating and Embankment	1.00	EA	223,991	196,441	0	420,432	420432
11.00.06	Closure Structures			0	0	110,000	110,000	
11.00.07	Interior Drainage			182,677	32,770	876,204	1,091,651	
11.00.08	Green Acres Mitigation			12,730	0	59,897	72,627	
11.00.09	Beautification			29,603	0	96,114	125,717	
	Associated General Items	1.00	EA	620,507	273,309	1,146,595	2,040,411	2040411

11.01	Levees							
11.01.01	Excavation and Embankment	1.00	EA	119,477	123,165	188,816	431,457	431457
	Levees	1.00	EA	119,477	123,165	188,816	431,457	431457

11.02	Floodwall							
11.02.01	Excavation and Embankment	1.00	EA	7,813	1,906	19,680	29,399	29399
11.02.02	Concrete Wall Erection	1.00	EA	425,721	57,033	580,904	1,063,659	1063659

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
	Floodwall	1.00	EA	433,534	58,940	600,584	1,093,058	1093058
	LEVEES AND FLOODWALLS	1.00	EA	1,173,517	455,414	1,935,995	3,564,927	3564927
13	PUMPING PLANT							
13.00	Pumping Plant							
13.00.99	Associated General Items	1.00	EA	0	0	300,000	300,000	300000
	Pumping Plant	1.00	EA	0	0	300,000	300,000	300000
	PUMPING PLANT	1.00	EA	0	0	300,000	300,000	300000
14	RECREATION FACILITIES							
14.00	Recreation Facilities							
14.00.72	Day Use Areas			74,770	0	71,568	146,338	
	Recreation Facilities			74,770	0	71,568	146,338	
	RECREATION FACILITIES			74,770	0	71,568	146,338	
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation			1,458,296	0	0	1,458,296	
	General Design Memorandum	1.00	EA	1,458,296	0	0	1,458,296	1458296
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,458,296	0	0	1,458,296	1458296
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration			388,025	0	0	388,025	
	Construction Contracts	1.00	EA	388,025	0	0	388,025	388025
	CONSTRUCTION MANAGEMENT	1.00	EA	388,025	0	0	388,025	388025
	Passaic #2A Project Cost	1.00	EA	3,776,920	456,414	2,308,564	6,541,898	6541898
	Prime Contractor's Field Overhead						579,342	

U.S. Army Corps of Engineers
PROJECT PAS_2A: Passaic #2A Project Cost - Passaic River
FINAL ESTIMATE
** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
SUBTOTAL						7,121,240	
Prime's Home Office Expense						170,317	
SUBTOTAL						7,291,557	
Prime Contractor's Profit						352,488	
SUBTOTAL						7,644,045	
Prime Contractor's Bond						27,277	
SUBTOTAL						7,671,322	
Insurance and Permits						36,786	
TOTAL INCL INDIRECTS						7,708,108	
Contingency						1,063,802	
TOTAL INCL OWNER COSTS						8,771,910	

ATTACHMENT M-CACES

DA - 22

DEEPAVAAL CHANNEL MODIFICATION

Deepavaal Brook Project Cost
Passaic River
Flood Damage Reduction Project
Deepavaal Brook
Channel Improvement

Designed By: RBA/ARORA Joint Venture
Estimated By: Arora and Associates, P.C.

Prepared By: Joseph S. Levin, Arora & Assoc.
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/23/95
Est Construction Time: 252 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

PROJECT DEEPAV: Deepavaal Brook Project Cost - Passaic River
FINAL ESTIMATE

TABLE OF CONTENTS

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

U.S. Army Corps of Engineers
 PROJECT DEEPAV: Deepavaal Brook Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01	LANDS AND DAMAGES						
01.20	General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	428,812	64,322	493,134	493134
	General Design Memorandum	1.00	EA	428,812	64,322	493,134	493134
	LANDS AND DAMAGES	1.00	EA	428,812	64,322	493,134	493134
02	RELOCATIONS						
02.03	Cemetery, Utilities, & Structure						
02.03.18	Utilities	1.00	EA	785,247	100,000	885,247	885247
	Cemetery, Utilities, & Structure	1.00	EA	785,247	100,000	885,247	885247
	RELOCATIONS	1.00	EA	785,247	100,000	885,247	885247
09	CHANNELS AND CANALS						
09.01	Channels						
09.01.01	Mob, Demob & Preparatory Work	1.00	EA	39,316	5,875	45,191	45191
09.01.02	Rip Rap	1.00	EA	7,327	1,000	8,327	8326.66
09.01.03	Excavation and Embankment	1.00	EA	432,102	65,000	497,102	497102
09.01.13	Traffic Control	1.00	EA	90,554	15,000	105,554	105554
09.01.99	Associated General Items	1.00	EA	281,502	42,250	323,752	323752
	Channels	1.00	EA	850,800	129,125	979,925	979925
	CHANNELS AND CANALS	1.00	EA	850,800	129,125	979,925	979925
30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation			583,978	76,024	660,002	
	General Design Memorandum	1.00	EA	583,978	76,024	660,002	660002
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	583,978	76,024	660,002	660002
31	CONSTRUCTION MANAGEMENT						

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

31.23	Construction Contracts					
31.23.11	Supervision and Administration					
			154,865	23,230	178,095	

	Construction Contracts	1.00 EA	154,865	23,230	178,095	178095

	CONSTRUCTION MANAGEMENT	1.00 EA	154,865	23,230	178,095	178095

	Deepavaal Brook Project Cost	1.00 EA	2,803,703	392,701	3,196,404	3196404

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	428,812	0	0	0	0	0	428,812	428812
	General Design Memorandum	1.00	EA	428,812	0	0	0	0	0	428,812	428812
	LANDS AND DAMAGES	1.00	EA	428,812	0	0	0	0	0	428,812	428812
02 RELOCATIONS											
02.03 Cemetery, Utilities, & Structure											
02.03.18	Utilities	1.00	EA	494,802	194,807	27,584	58,379	4,727	4,948	785,247	785247
	Cemetery, Utilities, & Structure	1.00	EA	494,802	194,807	27,584	58,379	4,727	4,948	785,247	785247
	RELOCATIONS	1.00	EA	494,802	194,807	27,584	58,379	4,727	4,948	785,247	785247
09 CHANNELS AND CANALS											
09.01 Channels											
09.01.01	Mob, Demob & Preparatory Work	1.00	EA	24,774	9,754	1,381	2,923	237	248	39,316	39316
09.01.02	Rip Rap	1.00	EA	4,617	1,818	257	545	44	46	7,327	7326.66
09.01.03	Excavation and Embankment	1.00	EA	272,277	107,197	15,179	32,125	2,601	2,723	432,102	432102
09.01.13	Traffic Control	1.00	EA	57,060	22,465	3,181	6,732	545	571	90,554	90554
09.01.99	Associated General Items	1.00	EA	177,381	69,836	9,889	20,928	1,695	1,774	281,502	281502
	Channels	1.00	EA	536,108	211,069	29,887	63,253	5,122	5,361	850,800	850800
	CHANNELS AND CANALS	1.00	EA	536,108	211,069	29,887	63,253	5,122	5,361	850,800	850800
30 PLANNING, ENGINEERING AND DESIGN											
30.20 General Design Memorandum											
30.20.08	Final Report Documentation			583,978	0	0	0	0	0	583,978	
	General Design Memorandum	1.00	EA	583,978	0	0	0	0	0	583,978	583978
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	583,978	0	0	0	0	0	583,978	583978
31 CONSTRUCTION MANAGEMENT											

PROJECT DEEPAV: Deepavaal Brook Project Cost - Passaic River

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	COST	UNI

31.23 Construction Contracts													
31.23.11 Supervision and Administration				154,865		0	0	0	0	0	154,865		

	Construction Contracts	1.00	EA	154,865		0	0	0	0	0	154,865		154865

	CONSTRUCTION MANAGEMENT	1.00	EA	154,865		0	0	0	0	0	154,865		154865

	Deepavaal Brook Project Cost	1.00	EA	2,198,565	405,876	57,471	121,633	9,849	10,309	2,803,703	2803703		
	Contingency									392,701			

	TOTAL INCL OWNER COSTS									3,196,404			

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	428,812	0	0	428,812	428812
	General Design Memorandum	1.00	EA	428,812	0	0	428,812	428812
	LANDS AND DAMAGES	1.00	EA	428,812	0	0	428,812	428812
02	RELOCATIONS							
02.03	Cemetery, Utilities, & Structure							
02.03.18	Utilities	1.00	EA	170,333	33,169	291,300	494,802	494802
	Cemetery, Utilities, & Structure	1.00	EA	170,333	33,169	291,300	494,802	494802
	RELOCATIONS	1.00	EA	170,333	33,169	291,300	494,802	494802
09	CHANNELS AND CANALS							
09.01	Channels							
09.01.01	Mob, Demob & Preparatory Work	1.00	EA	10,313	14,460	0	24,774	24774
09.01.02	Rip Rap	1.00	EA	1,729	732	2,156	4,617	4616.69
09.01.03	Excavation and Embankment	1.00	EA	115,825	156,452	0	272,277	272277
09.01.13	Traffic Control	1.00	EA	57,060	0	0	57,060	57060
09.01.99	Associated General Items	1.00	EA	116,868	56,637	3,876	177,381	177381
	Channels	1.00	EA	301,795	228,282	6,032	536,108	536108
	CHANNELS AND CANALS	1.00	EA	301,795	228,282	6,032	536,108	536108
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation			583,978	0	0	583,978	
	General Design Memorandum	1.00	EA	583,978	0	0	583,978	583978
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	583,978	0	0	583,978	583978
31	CONSTRUCTION MANAGEMENT							

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNI1

31.23 Construction Contracts								
31.23.11 Supervision and Administration				154,865	0	0	154,865	

	Construction Contracts	1.00	EA	154,865	0	0	154,865	154865

	CONSTRUCTION MANAGEMENT	1.00	EA	154,865	0	0	154,865	154865

	Deepavaal Brook Project Cost	1.00	EA	1,639,782	261,451	297,332	2,198,565	2198565
	Prime Contractor's Field Overhead						405,876	

	SUBTOTAL						2,604,441	
	Prime's Home Office Expense						57,471	

	SUBTOTAL						2,661,912	
	Prime Contractor's Profit						121,633	

	SUBTOTAL						2,783,545	
	Prime Contractor's Bond						9,849	

	SUBTOTAL						2,793,394	
	Insurance and Permits						10,309	

	TOTAL INCL INDIRECTS						2,803,703	
	Contingency						392,701	

	TOTAL INCL OWNER COSTS						3,196,404	

ATTACHMENT M-CACES

DA - 23

ROCKAWAY #1 LEVEE/FLOODWALL SYSTEM

Rockaway #1 Project Cost
Passaic River
Flood Damage Reduction Project
Rockaway #1
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: Arora and Associates, P.C.

Prepared By: Joseph S. Levin, Arora & Assoc.
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 05/10/95
Est Construction Time: 189 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

U.S. Army Corps of Engineers
 PROJECT ROCK#1: Rockaway #1 Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01 LANDS AND DAMAGES							
01.20 General Design Memorandum (GDM)							
01.20.03	Real Estate Analysis Documents			125,987	18,898	144,885	
	General Design Memorandum (GDM)			125,987	18,898	144,885	
	LANDS AND DAMAGES			125,987	18,898	144,885	

11 LEVEES AND FLOODWALLS							
11.00 Associated General Items							
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	51,729	8,000	59,729	59729
11.00.02	Traffic Control	1.00	EA	63,039	9,000	72,039	72039
11.00.03	Erosion Control	1.00	EA	15,612	2,000	17,612	17612
11.00.04	Clearing and Grubbing	1.00	EA	52,551	7,000	59,551	59551
11.00.05	Excavating and Embankment	1.00	EA	93,182	13,200	106,382	106382
11.00.06	Interior Drainage			1,184,954	177,400	1,362,354	
11.00.07	Beautification			64,425	9,664	74,089	
	Associated General Items	1.00	EA	1,525,493	226,264	1,751,757	1751757

11.01 Levees							
11.01.01	Excavation and Embankment	1.00	EA	596,751	86,300	683,051	683051
11.01.02	Drainage	1.00	EA	7,922	1,200	9,122	9122.12
	Levees	1.00	EA	604,673	87,500	692,173	692173

11.02 Floodwall							
11.02.01	Excavation and Embankment	1.00	EA	6,819	1,150	7,969	7969.28
11.02.02	Concrete Wall Erection	1.00	EA	182,540	30,000	212,540	212540
	Floodwall	1.00	EA	189,359	31,150	220,509	220509
	LEVEES AND FLOODWALLS	1.00	EA	2,319,525	344,914	2,664,439	2664439

13 PUMPING PLANT							
13.00 Pumping Plant							
13.00.99	Associated General Items	1.00	EA	101,271	17,000	118,271	118271

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
	Pumping Plant	1.00	EA	101,271	17,000	118,271	118271
	PUMPING PLANT	1.00	EA	101,271	17,000	118,271	118271
14	RECREATION FACILITIES						
14.00	Recreation Facilities						
14.00.23	Site Grading and Landscaping			23,342	3,501	26,843	
	Recreation Facilities			23,342	3,501	26,843	
	RECREATION FACILITIES			23,342	3,501	26,843	
30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation			613,325	78,212	691,537	
	General Design Memorandum			613,325	78,212	691,537	
	PLANNING, ENGINEERING AND DESIGN			613,325	78,212	691,537	
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration			183,310	27,497	210,807	
	Construction Contracts			183,310	27,497	210,807	
	CONSTRUCTION MANAGEMENT			183,310	27,497	210,807	
	Rockaway #1 Project Cost	1.00	EA	3,366,760	490,022	3,856,782	3856782

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum (GDM)											
01.20.03			125,987	0	0	0	0	0	0	125,987	

			125,987	0	0	0	0	0	0	125,987	

			125,987	0	0	0	0	0	0	125,987	
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	1.00	EA	38,310	6,951	1,810	3,945	330	383		51,729	51729
11.00.02	1.00	EA	46,686	8,471	2,206	4,807	402	467		63,039	63039
11.00.03	1.00	EA	11,562	2,098	546	1,191	100	116		15,612	15612
11.00.04	1.00	EA	38,919	7,062	1,839	4,007	335	389		52,551	52551
11.00.05	1.00	EA	69,010	12,522	3,261	7,106	594	690		93,182	93182
11.00.06			877,560	159,231	41,472	90,358	7,557	8,776		1,184,954	
11.00.07			64,425	0	0	0	0	0		64,425	

	1.00	EA	1,146,471	196,335	51,135	111,414	9,317	10,820		1,525,493	1525493
11.01 Levees											
11.01.01	1.00	EA	441,945	80,190	20,885	45,505	3,806	4,419		596,751	596751
11.01.02	1.00	EA	5,867	1,065	277	604	51	59		7,922	7922.12

	1.00	EA	447,812	81,255	21,163	46,109	3,856	4,478		604,673	604673
11.02 Floodwall											
11.02.01	1.00	EA	5,050	916	239	520	43	51		6,819	6819.28
11.02.02	1.00	EA	135,187	24,529	6,389	13,920	1,164	1,352		182,540	182540

	1.00	EA	140,237	25,446	6,627	14,440	1,208	1,402		189,359	189359

	1.00	EA	1,734,520	303,035	78,925	171,962	14,381	16,701		2,319,525	2319525
13 PUMPING PLANT											
13.00 Pumping Plant											
13.00.99	1.00	EA	75,000	13,609	3,544	7,722	646	750		101,271	101271

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT
Pumping Plant	1.00	EA	75,000	13,609	3,544	7,722	646	750	101,271	101271		
PUMPING PLANT	1.00	EA	75,000	13,609	3,544	7,722	646	750	101,271	101271		
14 RECREATION FACILITIES												
14.00 Recreation Facilities												
14.00.23	Site Grading and Landscaping			23,342	0	0	0	0	0	0	23,342	
	Recreation Facilities			23,342	0	0	0	0	0	0	23,342	
	RECREATION FACILITIES			23,342	0	0	0	0	0	0	23,342	
30 PLANNING, ENGINEERING AND DESIGN												
30.20 General Design Memorandum												
30.20.08	Final Report Documentation			613,325	0	0	0	0	0	0	613,325	
	General Design Memorandum			613,325	0	0	0	0	0	0	613,325	
	PLANNING, ENGINEERING AND DESIGN			613,325	0	0	0	0	0	0	613,325	
31 CONSTRUCTION MANAGEMENT												
31.23 Construction Contracts												
31.23.11	Supervision and Administration			183,310	0	0	0	0	0	0	183,310	
	Construction Contracts			183,310	0	0	0	0	0	0	183,310	
	CONSTRUCTION MANAGEMENT			183,310	0	0	0	0	0	0	183,310	
	Rockaway #1 Project Cost	1.00	EA	2,755,484	316,644	82,470	179,685	15,027	17,451	3,366,760	3366760	
	Contingency										490,022	
	TOTAL INCL OWNER COSTS										3,856,782	

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01	LANDS AND DAMAGES							
01.20	General Design Memorandum (GDM)							
01.20.03	Real Estate Analysis Documents	125,987		0	0	0	125,987	
	General Design Memorandum (GDM)	125,987		0	0	0	125,987	
	LANDS AND DAMAGES	125,987		0	0	0	125,987	
11	LEVEES AND FLOODWALLS							
11.00	Associated General Items							
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	23,060	15,250	0	38,310	38310
11.00.02	Traffic Control	1.00	EA	46,686	0	0	46,686	46686
11.00.03	Erosion Control	1.00	EA	9,060	635	1,868	11,562	11562
11.00.04	Clearing and Grubbing	1.00	EA	26,331	12,588	0	38,919	38919
11.00.05	Excavating and Embankment	1.00	EA	37,300	31,478	232	69,010	69010
11.00.06	Interior Drainage			140,850	23,566	713,145	877,560	
11.00.07	Beautification			13,910	0	50,515	64,425	
	Associated General Items	1.00	EA	297,196	83,516	765,760	1,146,471	1146471
11.01	Levees							
11.01.01	Excavation and Embankment	1.00	EA	121,274	125,191	195,480	441,945	441945
11.01.02	Drainage	1.00	EA	1,010	357	4,500	5,867	5867.01
	Levees	1.00	EA	122,284	125,548	199,980	447,812	447812
11.02	Floodwall							
11.02.01	Excavation and Embankment	1.00	EA	1,348	342	3,360	5,050	5050.26
11.02.02	Concrete Wall Erection	1.00	EA	54,446	7,336	73,404	135,187	135187
	Floodwall	1.00	EA	55,794	7,679	76,764	140,237	140237
	LEVEES AND FLOODWALLS	1.00	EA	475,274	216,742	1,042,504	1,734,520	1734520
13	PUMPING PLANT							
13.00	Pumping Plant							
13.00.99	Associated General Items	1.00	EA	0	0	75,000	75,000	75000

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
Pumping Plant	1.00	EA	0	0	75,000	75,000	75000
PUMPING PLANT	1.00	EA	0	0	75,000	75,000	75000
14 RECREATION FACILITIES							
14.00 Recreation Facilities							
14.00.23 Site Grading and Landscaping			12,748	0	10,593	23,342	
Recreation Facilities			12,748	0	10,593	23,342	
RECREATION FACILITIES			12,748	0	10,593	23,342	
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08 Final Report Documentation			613,325	0	0	613,325	
General Design Memorandum			613,325	0	0	613,325	
PLANNING, ENGINEERING AND DESIGN			613,325	0	0	613,325	
31 CONSTRUCTION MANAGEMENT							
31.23 Construction Contracts							
31.23.11 Supervision and Administration			183,310	0	0	183,310	
Construction Contracts			183,310	0	0	183,310	
CONSTRUCTION MANAGEMENT			183,310	0	0	183,310	
Rockaway #1 Project Cost	1.00	EA	1,410,644	216,742	1,128,097	2,755,484	2755484
Prime Contractor's Field Overhead						316,644	
SUBTOTAL						3,072,128	
Prime's Home Office Expense						82,470	
SUBTOTAL						3,154,597	
Prime Contractor's Profit						179,685	
SUBTOTAL						3,334,282	
Prime Contractor's Bond						15,027	
SUBTOTAL						3,349,309	

Mon 07 Aug 1995

U.S. Army Corps of Engineers
PROJECT ROCK#1: Rockaway #1 Project Cost - Passaic River

TIME 15:35:57

FINAL ESTIMATE

SUMMARY PAGE 7

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
Insurance and Permits						17,451	
TOTAL INCL INDIRECTS						3,366,760	
Contingency						490,022	
TOTAL INCL OWNER COSTS						3,856,782	

ATTACHMENT M-CACES

DA - 24

ROCKAWAY #2 LEVEE/FLOODWALL SYSTEM

Rockaway #2 Project Cost
Passaic River
Flood Damage Reduction Project
Rockaway #2
Levee System

Designed By: REA/ARORA Joint Venture
Estimated By: Arora and Associates, P.C.

Prepared By: Joseph S. Levin, Arora & Assoc.
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 05/19/95
Est Construction Time: 126 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01	LANDS AND DAMAGES						
01.20	General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	1,029,094	154,364	1,183,458	1183458
	General Design Memorandum	1.00	EA	1,029,094	154,364	1,183,458	1183458
	LANDS AND DAMAGES	1.00	EA	1,029,094	154,364	1,183,458	1183458
11	LEVEES AND FLOODWALLS						
11.00	Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	35,507	5,100	40,607	40607
11.00.02	Traffic Control	1.00	EA	45,747	6,500	52,247	52247
11.00.03	Erosion Control	1.00	EA	12,791	2,000	14,791	14791
11.00.04	Clearing and Grubbing	1.00	EA	48,590	7,200	55,790	55790
11.00.05	Excavating and Embankment	1.00	EA	101,260	15,050	116,310	116310
11.00.06	Driveway Relocation	1.00	EA	14,979	2,200	17,179	17179
11.00.07	Interior Drainage			517,933	82,000	599,933	
11.00.08	Beautification			63,368	9,505	72,873	
	Associated General Items	1.00	EA	840,175	129,555	969,730	969730
11.01	Levees						
11.01.01	Excavation and Embankment	1.00	EA	636,620	96,200	732,820	732820
11.01.03	Place Rip Rap	120.00	CY	4,161	750	4,911	40.92
	Levees	1.00	EA	640,781	96,950	737,731	737731
	LEVEES AND FLOODWALLS	1.00	EA	1,480,956	226,505	1,707,461	1707461
13	PUMPING PLANT						
13.00	Pumping Plant						
13.00.99	Associated General Items			135,679	15,000	150,679	
	Pumping Plant			135,679	15,000	150,679	
	PUMPING PLANT			135,679	15,000	150,679	
14	RECREATION FACILITIES						

U.S. Army Corps of Engineers
PROJECT ROCK#2: Rockaway #2 Project Cost - Passaic River
FINAL ESTIMATE
** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNI'L

14.00	Recreation Facilities						
14.00.23	Site Grading and Landscaping	1.00	EA	18,909	2,836	21,745	21745
	Recreation Facilities	1.00	EA	18,909	2,836	21,745	21745
	RECREATION FACILITIES	1.00	EA	18,909	2,836	21,745	21745

30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation	1.00	EA	410,380	52,332	462,712	462712
	General Design Memorandum	1.00	EA	410,380	52,332	462,712	462712
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	410,380	52,332	462,712	462712

31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration	1.00	EA	122,666	18,400	141,066	141066
	Construction Contracts	1.00	EA	122,666	18,400	141,066	141066
	CONSTRUCTION MANAGEMENT	1.00	EA	122,666	18,400	141,066	141066
	Rockaway #2 Project Cost	1.00	EA	3,197,683	469,438	3,667,121	3667121

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	1,029,094	0	0	0	0	0	1,029,094	1029094

	General Design Memorandum	1.00	EA	1,029,094	0	0	0	0	0	1,029,094	1029094

	LANDS AND DAMAGES	1.00	EA	1,029,094	0	0	0	0	0	1,029,094	1029094
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	26,170	5,004	1,247	2,581	244	262	35,507	35507
11.00.02	Traffic Control	1.00	EA	33,717	6,447	1,607	3,325	314	337	45,747	45747
11.00.03	Erosion Control	1.00	EA	9,428	1,803	449	930	88	94	12,791	12791
11.00.04	Clearing and Grubbing	1.00	EA	35,812	6,847	1,706	3,532	334	358	48,590	48590
11.00.05	Excavating and Embankment	1.00	EA	74,632	14,270	3,556	7,360	696	746	101,260	101260
11.00.06	Driveway Relocation	1.00	EA	11,040	2,111	526	1,089	103	110	14,979	14979
11.00.07	Interior Drainage			381,734	72,989	18,189	37,644	3,560	3,817	517,933	
11.00.08	Beautification			63,368	0	0	0	0	0	63,368	

	Associated General Items	1.00	EA	635,901	109,471	27,280	56,459	5,339	5,725	840,175	840175
11.01 Levees											
11.01.01	Excavation and Embankment	1.00	EA	469,211	89,715	22,357	46,270	4,375	4,692	636,620	636620
11.01.03	Place Rip Rap	120.00	CY	3,067	586	146	302	29	31	4,161	34.67

	Levees	1.00	EA	472,277	90,301	22,503	46,573	4,404	4,723	640,781	640781

	LEVEES AND FLOODWALLS	1.00	EA	1,108,179	199,772	49,783	103,032	9,742	10,448	1,480,956	1480956
13 PUMPING PLANT											
13.00 Pumping Plant											
13.00.99	Associated General Items			100,000	19,120	4,765	9,861	932	1,000	135,679	

	Pumping Plant			100,000	19,120	4,765	9,861	932	1,000	135,679	

	PUMPING PLANT			100,000	19,120	4,765	9,861	932	1,000	135,679	
14 RECREATION FACILITIES											

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

14.00 Recreation Facilities											
14.00.23	Site Grading and Landscaping	1.00	EA	18,909	0	0	0	0	0	18,909	18909
	Recreation Facilities	1.00	EA	18,909	0	0	0	0	0	18,909	18909
	RECREATION FACILITIES	1.00	EA	18,909	0	0	0	0	0	18,909	18909
30 PLANNING, ENGINEERING AND DESIGN											
30.20 General Design Memorandum											
30.20.08	Final Report Documentation	1.00	EA	410,380	0	0	0	0	0	410,380	410380
	General Design Memorandum	1.00	EA	410,380	0	0	0	0	0	410,380	410380
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	410,380	0	0	0	0	0	410,380	410380
31 CONSTRUCTION MANAGEMENT											
31.23 Construction Contracts											
31.23.11	Supervision and Administration	1.00	EA	122,666	0	0	0	0	0	122,666	122666
	Construction Contracts	1.00	EA	122,666	0	0	0	0	0	122,666	122666
	CONSTRUCTION MANAGEMENT	1.00	EA	122,666	0	0	0	0	0	122,666	122666
	Rockaway #2 Project Cost Contingency	1.00	EA	2,789,227	218,892	54,548	112,893	10,675	11,448	3,197,683	3197683
										469,438	
	TOTAL INCL OWNER COSTS									3,667,121	

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00	EA	1,029,094	0	0	1,029,094	1029094
	General Design Memorandum	1.00	EA	1,029,094	0	0	1,029,094	1029094
	LANDS AND DAMAGES	1.00	EA	1,029,094	0	0	1,029,094	1029094

11 LEVEES AND FLOODWALLS								
11.00 Associated General Items								
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	13,685	12,485	0	26,170	26170
11.00.02	Traffic Control	1.00	EA	33,717	0	0	33,717	33717
11.00.03	Erosion Control	1.00	EA	7,382	517	1,528	9,428	9427.56
11.00.04	Clearing and Grubbing	1.00	EA	24,295	11,517	0	35,812	35812
11.00.05	Excavating and Embankment	1.00	EA	42,516	32,116	0	74,632	74632
11.00.06	Driveway Relocation	1.00	EA	0	0	11,040	11,040	11040
11.00.07	Interior Drainage			54,688	9,118	317,928	381,734	
11.00.08	Beautification			16,424	0	46,944	63,368	
	Associated General Items	1.00	EA	192,708	65,754	377,440	635,901	635901

11.01 Levees								
11.01.01	Excavation and Embankment	1.00	EA	128,282	132,581	208,348	469,211	469211
11.01.03	Place Rip Rap	120.00	CY	576	240	2,250	3,067	25.56
	Levees	1.00	EA	128,858	132,821	210,598	472,277	472277
	LEVEES AND FLOODWALLS	1.00	EA	321,566	198,575	588,038	1,108,179	1108179

13 PUMPING PLANT								
13.00 Pumping Plant								
13.00.99	Associated General Items			0	0	100,000	100,000	
	Pumping Plant			0	0	100,000	100,000	
	PUMPING PLANT			0	0	100,000	100,000	

14 RECREATION FACILITIES								

U.S. Army Corps of Engineers
 PROJECT ROCK#2: Rockaway #2 Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

14.00	Recreation Facilities							
14.00.23	Site Grading and Landscaping	1.00	EA	10,327	0	8,582	18,909	18909
	Recreation Facilities	1.00	EA	10,327	0	8,582	18,909	18909
	RECREATION FACILITIES	1.00	EA	10,327	0	8,582	18,909	18909

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation	1.00	EA	410,380	0	0	410,380	410380
	General Design Memorandum	1.00	EA	410,380	0	0	410,380	410380
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	410,380	0	0	410,380	410380

31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration	1.00	EA	122,666	0	0	122,666	122666
	Construction Contracts	1.00	EA	122,666	0	0	122,666	122666
	CONSTRUCTION MANAGEMENT	1.00	EA	122,666	0	0	122,666	122666
	Rockaway #2 Project Cost	1.00	EA	1,894,033	198,575	696,619	2,789,227	2789227
	Prime Contractor's Field Overhead						218,892	
	SUBTOTAL						3,008,119	
	Prime's Home Office Expense						54,548	
	SUBTOTAL						3,062,667	
	Prime Contractor's Profit						112,893	
	SUBTOTAL						3,175,560	
	Prime Contractor's Bond						10,675	
	SUBTOTAL						3,186,235	
	Insurance and Permits						11,448	
	TOTAL INCL INDIRECTS						3,197,683	
	Contingency						469,438	
	TOTAL INCL OWNER COSTS						3,667,121	

ATTACHMENT M-CACES

DA - 25

ROCKAWAY #3 LEVEE/FLOODWALL SYSTEM

Rockaway #3 Project Cost
Passaic River
Flood Damage Reduction Project
Rockaway #3
Levee/Floodwall System

Designed By: RBA/ARORA Joint Venture
Estimated By: Arora and Associates, P.C.

Prepared By: Joseph S. Levin, Arora & Assoc.
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 05/31/95
Est Construction Time: 315 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT

01	LANDS AND DAMAGES						
01.20	General Design Memorandum						
01.20.03	Real Estate Analysis Documents	1.00	EA	566,524	84,979	651,503	651503
	General Design Memorandum	1.00	EA	566,524	84,979	651,503	651503
	LANDS AND DAMAGES	1.00	EA	566,524	84,979	651,503	651503
11	LEVEES AND FLOODWALLS						
11.00	Associated General Items						
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	89,857	11,950	101,807	101807
11.00.02	Traffic Control	1.00	EA	109,784	15,200	124,984	124984
11.00.03	Erosion Control	1.00	EA	28,890	4,000	32,890	32890
11.00.04	Clearing and Grubbing	1.00	EA	33,956	4,800	38,756	38756
11.00.05	Excavating and Embankment	1.00	EA	95,926	13,300	109,226	109226
11.00.06	Existing Structure(s)	1.00	EA	424,931	59,000	483,931	483931
11.00.07	Closure Structures			515,874	75,000	590,874	
11.00.08	Interior Drainage			100,216	13,500	113,716	
11.00.09	Beautification			112,523	16,878	129,402	
11.00.10	Existing Flood Control System			5,694,000	0	5,694,000	
	Associated General Items	1.00	EA	7,205,957	213,628	7,419,586	7419586
11.01	Levees						
11.01.01	Excavation and Embankment	1.00	EA	71,867	10,200	82,067	82067
	Levees	1.00	EA	71,867	10,200	82,067	82067
11.02	Floodwall						
11.02.01	Excavation and Embankment	1.00	EA	72,184	10,100	82,284	82284
11.02.02	Concrete Wall Erection	1.00	EA	3,156,581	466,393	3,622,973	3622973
	Floodwall	1.00	EA	3,228,765	476,493	3,705,258	3705258
	LEVEES AND FLOODWALLS	1.00	EA	10,506,589	700,321	11,206,910	11206910
14	RECREATION FACILITIES						
14.00	Recreation Facilities						

U.S. Army Corps of Engineers
 PROJECT ROCK#3: Rockaway #3 Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT
14.00.23	Site Grading and Landscaping			46,410	6,962	53,372	
	Recreation Facilities			46,410	6,962	53,372	
	RECREATION FACILITIES			46,410	6,962	53,372	
30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation			1,108,256	141,334	1,249,590	
	General Design Memorandum			1,108,256	141,334	1,249,590	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,108,256	141,334	1,249,590	1249590
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration			334,538	50,181	384,719	
	Construction Contracts			334,538	50,181	384,719	
	CONSTRUCTION MANAGEMENT	1.00	EA	334,538	50,181	384,719	384719
	Rockaway #3 Project Cost	1.00	EA	12,562,317	983,776	13,546,093	13546093

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT

01 LANDS AND DAMAGES											
01.20 General Design Memorandum											
01.20.03	Real Estate Analysis Documents	1.00	EA	566,524	0	0	0	0	0	566,524	566524
	General Design Memorandum	1.00	EA	566,524	0	0	0	0	0	566,524	566524
	LANDS AND DAMAGES	1.00	EA	566,524	0	0	0	0	0	566,524	566524
11 LEVEES AND FLOODWALLS											
11.00 Associated General Items											
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	67,932	11,042	3,159	6,538	508	679	89,857	89857
11.00.02	Traffic Control	1.00	EA	82,996	13,490	3,859	7,988	620	830	109,784	109784
11.00.03	Erosion Control	1.00	EA	21,841	3,550	1,016	2,102	163	218	28,890	28890
11.00.04	Clearing and Grubbing	1.00	EA	25,670	4,172	1,194	2,471	192	257	33,956	33956
11.00.05	Excavating and Embankment	1.00	EA	72,520	11,787	3,372	6,979	542	725	95,926	95926
11.00.06	Existing Structure(s)	1.00	EA	321,247	52,215	14,938	30,917	2,401	3,212	424,931	424931
11.00.07	Closure Structures			390,000	63,390	18,136	37,533	2,915	3,900	515,874	
11.00.08	Interior Drainage			75,763	12,315	3,523	7,291	566	758	100,216	
11.00.09	Beautification			112,523	0	0	0	0	0	112,523	
11.00.10	Existing Flood Control System			5,694,000	0	0	0	0	0	5,694,000	
	Associated General Items	1.00	EA	6,864,493	171,962	49,197	101,819	7,907	10,580	7,205,957	7205957
11.01 Levees											
11.01.01	Excavation and Embankment	1.00	EA	54,331	8,831	2,526	5,229	406	543	71,867	71867
	Levees	1.00	EA	54,331	8,831	2,526	5,229	406	543	71,867	71867
11.02 Floodwall											
11.02.01	Excavation and Embankment	1.00	EA	54,571	8,870	2,538	5,252	408	546	72,184	72184
11.02.02	Concrete Wall Erection	1.00	EA	2,386,369	387,879	110,970	229,663	17,835	23,864	3,156,581	3156581
	Floodwall	1.00	EA	2,440,940	396,749	113,508	234,915	18,243	24,409	3,228,765	3228765
	LEVEES AND FLOODWALLS	1.00	EA	9,359,764	577,542	165,231	341,963	26,556	35,532	10,506,589	10506589
14 RECREATION FACILITIES											
14.00 Recreation Facilities											

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL COST	UNIT
14.00.23	Site Grading and Landscaping	46,410		0	0	0	0	0	0	0	46,410	
	Recreation Facilities	46,410		0	0	0	0	0	0	0	46,410	
	RECREATION FACILITIES	46,410		0	0	0	0	0	0	0	46,410	
30	PLANNING, ENGINEERING AND DESIGN											
30.20	General Design Memorandum											
30.20.08	Final Report Documentation	1,108,256		0	0	0	0	0	0	0	1,108,256	
	General Design Memorandum	1,108,256		0	0	0	0	0	0	0	1,108,256	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,108,256	0	0	0	0	0	0	1,108,256	1108256
31	CONSTRUCTION MANAGEMENT											
31.23	Construction Contracts											
31.23.11	Supervision and Administration	334,538		0	0	0	0	0	0	0	334,538	
	Construction Contracts	334,538		0	0	0	0	0	0	0	334,538	
	CONSTRUCTION MANAGEMENT	1.00	EA	334,538	0	0	0	0	0	0	334,538	334538
	Rockaway #3 Project Cost	1.00	EA	11,415,492	577,542	165,231	341,963	26,556	35,532	12,562,317	12562317	
	Contingency										983,776	
	TOTAL INCL OWNER COSTS										13,546,093	

U.S. Army Corps of Engineers
PROJECT ROCK#3: Rockaway #3 Project Cost - Passaic River
FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents	1.00	EA	566,524	0	0	566,524	566524
	General Design Memorandum	1.00	EA	566,524	0	0	566,524	566524
	LANDS AND DAMAGES	1.00	EA	566,524	0	0	566,524	566524

11 LEVEES AND FLOODWALLS								
11.00 Associated General Items								
11.00.01	Mob, Demob & Preparatory Work	1.00	EA	43,517	24,414	0	67,932	67932
11.00.02	Traffic Control	1.00	EA	82,996	0	0	82,996	82996
11.00.03	Erosion Control	1.00	EA	17,114	1,199	3,529	21,841	21841
11.00.04	Clearing and Grubbing	1.00	EA	15,776	9,895	0	25,670	25670
11.00.05	Excavating and Embankment	1.00	EA	41,134	31,385	0	72,520	72520
11.00.06	Existing Structure(s)	1.00	EA	210,181	92,508	18,558	321,247	321247
11.00.07	Closure Structures			0	0	390,000	390,000	
11.00.08	Interior Drainage			10,169	1,221	64,374	75,763	
11.00.09	Beautification			34,947	0	77,577	112,523	
11.00.10	Existing Flood Control System			1,900,000	894,000	2,900,000	5,694,000	
	Associated General Items	1.00	EA	2,355,834	1054621	3,454,037	6,864,493	6864493

11.01 Levees								
11.01.01	Excavation and Embankment	1.00	EA	15,257	15,626	23,448	54,331	54331
	Levees	1.00	EA	15,257	15,626	23,448	54,331	54331

11.02 Floodwall								
11.02.01	Excavation and Embankment	1.00	EA	14,480	3,611	36,480	54,571	54571
11.02.02	Concrete Wall Erection	1.00	EA	839,983	116,362	1,430,024	2,386,369	2386369
	Floodwall	1.00	EA	854,463	119,973	1,466,504	2,440,940	2440940
	LEVEES AND FLOODWALLS	1.00	EA	3,225,554	1190220	4,943,989	9,359,764	9359764

14 RECREATION FACILITIES								
14.00 Recreation Facilities								

U.S. Army Corps of Engineers
 PROJECT ROCK#3: Rockaway #3 Project Cost - Passaic River
 FINAL ESTIMATE
 ** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL COST	UNIT
14.00.23	Site Grading and Landscaping	25,347		0	21,063	46,410		
	Recreation Facilities	25,347		0	21,063	46,410		
	RECREATION FACILITIES	25,347		0	21,063	46,410		
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation	1,108,256		0	0	1,108,256		
	General Design Memorandum	1,108,256		0	0	1,108,256		
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,108,256	0	0	1,108,256	1108256
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration	334,538		0	0	334,538		
	Construction Contracts	334,538		0	0	334,538		
	CONSTRUCTION MANAGEMENT	1.00	EA	334,538	0	0	334,538	334538
	Rockaway #3 Project Cost	1.00	EA	5,260,219	1190220	4,965,052	11,415,492	11415492
	Prime Contractor's Field Overhead					577,542		
	SUBTOTAL					11,993,034		
	Prime's Home Office Expense					165,231		
	SUBTOTAL					12,158,265		
	Prime Contractor's Profit					341,963		
	SUBTOTAL					12,500,228		
	Prime Contractor's Bond					26,556		
	SUBTOTAL					12,526,784		
	Insurance and Permits					35,532		
	TOTAL INCL INDIRECTS					12,562,317		
	Contingency					983,776		
	TOTAL INCL OWNER COSTS					13,546,093		

ATTACHMENT M-CACES

DA - 26

PASSAIC #10 LEVEE/FLOODWALL SYSTEM

Passaic #10 Project Cost
Passaic River
Flood Damage Reduction Project
Passaic #10
Levee System

Designed By: Wilmington District, L. Creech
Estimated By: CESAW-EN-E

Prepared By: D. W. Greene, CESAW-EN-E
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 05/30/95
Est Construction Time: 252 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

Any HTRW issues are to be resolved before construction and therefore are not included in this estimate other than for HTRW testing. Because this project is nearly in the Plans & Specs. stage, contingencies for all items are 10%.

EARTHWORK:

All earthwork quantities are shown as Loose Cubic Yards, except for Footprint Excavation which is calculated in Bank Cubic Yards. Most borrow material will come from an on site borrow pit with an average haul distance of 1 mile. Additional borrow material will come from the Hatfield Swamp project where excavation and loading will not be charged to the Passaic #10 project. Haul distance one way from Hatfield Swamp is 4 miles.

The following adjustments were made to develop costs for northern New Jersey at October 1994 price levels.

LABOR:

The 1994 Passaic River Basin Labor Rates Database was used to calculate labor costs.

EQUIPMENT:

The 1994 Region 1 Equipment Rates Database was used to calculate equipment costs.

CREWS:

The 1994 Passaic River Basin Crews Database was used to calculate crew costs.

MATERIALS:

Costs were obtained from the 1994 Region 1 (Passaic River Basin) Unit Price Book, Passaic River Basin Materials Resources Study, and direct inquiries.

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES						
01.21 Feature Design Memorandum						
01.21.03	Real Estate Analysis Documents	1.00 EA	28,215	2,822	31,037	31036.50
	Feature Design Memorandum	1.00 EA	28,215	2,822	31,037	31036.50
	LANDS AND DAMAGES	1.00 EA	28,215	2,822	31,037	31036.50
11 LEVEES AND FLOODWALLS						
11.01 Mob/Demob						
	Mob/Demob	1.00 EA	63,968	6,400	70,368	70368.41
11.02 Site Preparation						
11.02.01	Clearing	1.00 EA	58,054	5,800	63,854	63854.01
11.02.02	Erosion Control	1.00 EA	87,745	8,800	96,545	96545.11
	Site Preparation	1.00 EA	145,799	14,600	160,399	160399.12
11.03 Levee						
11.03.01	Earth Dike	1.00 EA	791,873	80,000	871,873	871873.05
11.03.02	Concrete Wall	1.00 EA	69,866	7,200	77,066	77065.65
	Levee	1.00 EA	861,739	87,200	948,939	948938.69
11.04 Interior Drainage						
11.04.01	Culverts and Gates	1.00 EA	47,753	5,000	52,753	52752.92
	Interior Drainage	1.00 EA	47,753	5,000	52,753	52752.92
11.05 Landscaping						
11.05.01	Establish Turf	1.00 EA	57,971	6,000	63,971	63971.35
	Landscaping	1.00 EA	57,971	6,000	63,971	63971.35
11.06 Green Acres Mitigation						

PROJECT PAS10B: Passaic #10 Project Cost - Passaic River

Feature Design Memorandum - Oct 1994 Price Level

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST
Green Acres Mitigation		1.00	EA	185,464	27,820	213,283	213283.14
11.07 Beautification							
Beautification		1.00	EA	109,698	16,455	126,153	126153.16
LEVEES AND FLOODWALLS		1.00	EA	1,472,392	163,474	1,635,867	1635867
13 PUMPING PLANT							
13.00 Pumping Plant							
13.00.99 Associated General Items		1.00	EA	203,616	20,000	223,616	223615.61
Pumping Plant		1.00	EA	203,616	20,000	223,616	223615.61
PUMPING PLANT		1.00	EA	203,616	20,000	223,616	223615.61
30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08 Final Report Documentation		1.00	EA	769,349	1,772	771,121	771121.00
General Design Memorandum		1.00	EA	769,349	1,772	771,121	771121.00
PLANNING, ENGINEERING AND DESIGN		1.00	EA	769,349	1,772	771,121	771121.00
31 CONSTRUCTION MANAGEMENT							
31.23 Construction Contracts							
31.23.11 Supervision and Administration		1.00	EA	118,145	17,722	135,867	135867.00
Construction Contracts		1.00	EA	118,145	17,722	135,867	135867.00
CONSTRUCTION MANAGEMENT		1.00	EA	118,145	17,722	135,867	135867.00
Passaic #10 Project Cost		1.00	EA	2,591,717	205,790	2,797,507	2797507

PROJECT PAS10B: Passaic #10 Project Cost - Passaic River

Feature Design Memorandum - Oct 1994 Price Level

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	DIRECT	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES										
01.21 Feature Design Memorandum										
01.21.03	Real Estate Analysis Document	1.00	EA	28,215	0	0	0	0	28,215	28215.00
	Feature Design Memorandum	1.00	EA	28,215	0	0	0	0	28,215	28215.00
	LANDS AND DAMAGES	1.00	EA	28,215	0	0	0	0	28,215	28215.00

11 LEVEES AND FLOODWALLS										
11.01 Mob/Demob										
	Mob/Demob	1.00	EA	53,268	3,196	2,259	4,707	539	63,968	63968.41

11.02 Site Preparation										
11.02.01	Clearing	1.00	EA	48,343	2,901	2,050	4,271	489	58,054	58054.01
11.02.02	Erosion Control	1.00	EA	73,067	4,384	3,098	6,456	740	87,745	87745.11
	Site Preparation	1.00	EA	121,410	7,285	5,148	10,727	1,229	145,799	145799.12

11.03 Levee										
11.03.01	Earth Dike	1.00	EA	659,411	39,565	27,959	58,264	6,674	791,873	791873.05
11.03.02	Concrete Wall	1.00	EA	58,179	3,491	2,467	5,141	589	69,866	69865.65
	Levee	1.00	EA	717,590	43,055	30,426	63,404	7,263	861,739	861738.69

11.04 Interior Drainage										
11.04.01	Culverts and Gates	1.00	EA	39,765	2,386	1,686	3,514	402	47,753	47752.92
	Interior Drainage	1.00	EA	39,765	2,386	1,686	3,514	402	47,753	47752.92

11.05 Landscaping										
11.05.01	Establish Turf	1.00	EA	48,274	2,896	2,047	4,265	489	57,971	57971.35
	Landscaping	1.00	EA	48,274	2,896	2,047	4,265	489	57,971	57971.35

11.06 Green Acres Mitigation										

PROJECT PAS10B: Passaic #10 Project Cost - Passaic River

Feature Design Memorandum - Oct 1994 Price Level

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
Green Acres Mitigation	1.00	EA	185,464	0	0	0	0	185,464	185463.60
11.07 Beautification									
Beautification	1.00	EA	109,698	0	0	0	0	109,698	109698.40
LEVEES AND FLOODWALLS	1.00	EA	1,275,469	58,818	41,565	86,617	9,922	1,472,392	1472392
13 PUMPING PLANT									
13.00 Pumping Plant									
13.00.99 Associated General Items	1.00	EA	169,556	10,173	7,189	14,981	1,716	203,616	203615.61
Pumping Plant	1.00	EA	169,556	10,173	7,189	14,981	1,716	203,616	203615.61
PUMPING PLANT	1.00	EA	169,556	10,173	7,189	14,981	1,716	203,616	203615.61
30 PLANNING, ENGINEERING AND DESIGN									
30.20 General Design Memorandum									
30.20.08 Final Report Documentation	1.00	EA	769,349	0	0	0	0	769,349	769349.00
General Design Memorandum	1.00	EA	769,349	0	0	0	0	769,349	769349.00
PLANNING, ENGINEERING AND DES	1.00	EA	769,349	0	0	0	0	769,349	769349.00
31 CONSTRUCTION MANAGEMENT									
31.23 Construction Contracts									
31.23.11 Supervision and Administratio	1.00	EA	118,145	0	0	0	0	118,145	118145.00
Construction Contracts	1.00	EA	118,145	0	0	0	0	118,145	118145.00
CONSTRUCTION MANAGEMENT	1.00	EA	118,145	0	0	0	0	118,145	118145.00
Passaic #10 Project Cost Contingency	1.00	EA	2,360,734	68,992	48,754	101,599	11,638	2,591,717	2591717
								205,790	
TOTAL INCL OWNER COSTS								2,797,507	

	QUANTITY	UOM	MANHRS	LABOR	EQUIPMN	MATERIA	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.21 Feature Design Memorandum								
01.21.03	Real Estate Analysis Documents	1.00	EA	0	28,215	0	0	28,215 28215.00
	Feature Design Memorandum	1.00	EA	0	28,215	0	0	28,215 28215.00
	LANDS AND DAMAGES	1.00	EA	0	28,215	0	0	28,215 28215.00
11 LEVEES AND FLOODWALLS								
11.01 Mob/Demob								
	Mob/Demob	1.00	EA	0	20,000	20,000	13,268	53,268 53268.00
11.02 Site Preparation								
11.02.01	Clearing	1.00	EA	959	32,898	15,445	0	48,343 48342.94
11.02.02	Erosion Control	1.00	EA	1,049	39,300	27,688	6,080	73,067 73067.42
	Site Preparation	1.00	EA	2,007	72,198	43,133	6,080	121,410 121410.35
11.03 Levee								
11.03.01	Earth Dike	1.00	EA	9,700	322,401	337,010	0	659,411 659411.30
11.03.02	Concrete Wall	1.00	EA	587	28,273	4,875	25,032	58,179 58178.76
	Levee	1.00	EA	10,288	350,674	341,884	25,032	717,590 717590.06
11.04 Interior Drainage								
11.04.01	Culverts and Gates	1.00	EA	273	12,083	1,858	25,824	39,765 39764.98
	Interior Drainage	1.00	EA	273	12,083	1,858	25,824	39,765 39764.98
11.05 Landscaping								
11.05.01	Establish Turf	1.00	EA	501	19,901	1,556	26,818	48,274 48274.10
	Landscaping	1.00	EA	501	19,901	1,556	26,818	48,274 48274.10
11.06 Green Acres Mitigation								

		QUANTITY	UOM	MANHRS	LABOR	EQUIPMN	MATERIA	TOTAL COST	UNIT	COS1
Green Acres Mitigation		1.00	EA	0	32,594	152,870	0	185,464	185463.60	
11.07 Beautification										
Beautification		1.00	EA	0	25,186	84,512	0	109,698	109698.40	
LEVEES AND FLOODWALLS		1.00	EA	13,070	532,635	645,813	97,021	1,275,469	1275469	
13 PUMPING PLANT										
13.00 Pumping Plant										
13.00.99 Associated General Items		1.00	EA	1,082	46,390	6,832	116,334	169,556	169555.50	
Pumping Plant		1.00	EA	1,082	46,390	6,832	116,334	169,556	169555.50	
PUMPING PLANT		1.00	EA	1,082	46,390	6,832	116,334	169,556	169555.50	
30 PLANNING, ENGINEERING AND DESIGN										
30.20 General Design Memorandum										
30.20.08 Final Report Documentation		1.00	EA	0	769,349	0	0	769,349	769349.00	
General Design Memorandum		1.00	EA	0	769,349	0	0	769,349	769349.00	
PLANNING, ENGINEERING AND DESIGN		1.00	EA	0	769,349	0	0	769,349	769349.00	
31 CONSTRUCTION MANAGEMENT										
31.23 Construction Contracts										
31.23.11 Supervision and Administration		1.00	EA	0	118,145	0	0	118,145	118145.00	
Construction Contracts		1.00	EA	0	118,145	0	0	118,145	118145.00	
CONSTRUCTION MANAGEMENT		1.00	EA	0	118,145	0	0	118,145	118145.00	
Passaic #10 Project Cost OVERHEAD		1.00	EA	14,152	1494734	652,645	213,355	2,360,734	2360734	68,992
SUBTOTAL								2,429,726		
HOME OFC								48,754		

Fri 04 Aug 1995

U.S. Army Corps of Engineers

TIME 09:12:01

PROJECT PAS10B: Passaic #10 Project Cost - Passaic River

Feature Design Memorandum - Oct 1994 Price Level

SUMMARY PAGE 7

** PROJECT DIRECT SUMMARY - LEVEL 3 **

QUANTITY UOM MANHRS LABOR EQUIPMN MATERIA TOTAL COST UNIT COST

SUBTOTAL					-----	2,478,480
PROFIT						101,599
SUBTOTAL					-----	2,580,079
BOND						11,638
TOTAL INCL INDIRECTS					-----	2,591,717
Contingency						205,790
TOTAL INCL OWNER COSTS					-----	2,797,507

ATTACHMENT M-CACES

DA - 27

PHASE II TUNNEL - Contract D

Tue 08 Aug 1995

U.S. Army Corps of Engineers

TIME 11:10:18

PROJECT PIICD2: Phase II Tunnel - Contract D - Pompton Inlet to WS #3
FINAL ESTIMATE

TITLE PAGE 1

Phase II Tunnel - Contract D
Pompton Inlet to WS #3
Sta 1077 + 47 to Sta 843 + 47
Passaic River
Flood Control Project

Designed By: Engineering Div, Nashville Dist
Estimated By: H.F. (Bud) Kiefer, CENAN-PR-TC

Prepared By: Civil Design Team, Tech Eng Br.
Passaic River Division

Date: 04/01/95
Est Construction Time: 882 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	4
PROJECT DIRECT SUMMARY - LEVEL 3.....	7

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

PROJECT PIICD2: Phase II Tunnel - Contract D - Pompton Inlet to WS #3

FINAL ESTIMATE

SUMMARY PAGE 1

** PROJECT OWNER SUMMARY - LEVEL 3 **

	QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03			1,159,673	173,951	1,333,623		
			-----	-----	-----		
			1,159,673	173,951	1,333,623		
			-----	-----	-----		
			1,159,673	173,951	1,333,623		
15 FLOODWAY CONTROL & DIV STRUCT							
15.01 Mob/Demob & Site Prep Work							
15.01.01			1,073,221	75,000	1,148,221		
15.01.02			405,066	35,000	440,066		
			-----	-----	-----		
			1,478,287	110,000	1,588,287		
15.02 Excavation							
15.02.01			12,732,562	2,160,000	14,892,562		
15.02.02	156.00	DAY	3,034,460	340,000	3,374,460	21631.16	
15.02.03			817,735	116,000	933,735		
15.02.04	46964.00	CY	4,101,784	332,390	4,434,174	94.42	
15.02.06	1191158	CY	58,457,355	6,303,000	64,760,355	54.37	
15.02.07	123269	CY	6,969,610	771,000	7,740,610	62.79	
			-----	-----	-----		
			86,113,506	10,022,390	96,135,896		
15.03 Rockbolts							
15.03.01	46757.00	EA	8,150,679	1,192,000	9,342,679	199.81	
			-----	-----	-----		
			8,150,679	1,192,000	9,342,679	199.81	
15.04 Grout Inflows							
15.04.01	143.00	DAY	5,819,778	825,000	6,644,778	46466.98	
			-----	-----	-----		
			5,819,778	825,000	6,644,778	46466.98	
15.07 Welded Wire Fabric							
15.07.01	100846	SF	812,686	63,000	875,686	8.68	

		QUANTITY	UOM	CONTRACT COST	CONTINGEN	TOTAL COST	UNIT	NOTES
Welded Wire Fabric		100846	SF	812,686	63,000	875,686	8.68	
15.08 Concrete								
15.08.01	Shaft Support			4,628,986	728,700	5,357,686		
15.08.02	Weekend Maintenance & Watch	68.00	DAY	1,242,445	145,000	1,387,445	20403.60	
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	451,670	63,000	514,670	8577.83	
15.08.04	Invert Clean Up	89.00	DAY	2,826,446	285,000	3,111,446	34960.07	
15.08.05	Form & Place Concrete	150068	CY	19,410,044	2,853,019	22,263,063	148.35	
Concrete		132945	CY	28,559,590	4,074,719	32,634,309	245.47	
15.09 Contact Grout								
15.09.01	Contact Grout	47.00	DAY	1,631,478	159,503	1,790,981	38105.97	
Contact Grout		47.00	DAY	1,631,478	159,503	1,790,981	38105.97	
15.10 Final Clean Up								
15.10.01	Final Clean Up	23.00	DAY	693,399	57,000	750,399	32626.04	
Final Clean Up		23.00	DAY	693,399	57,000	750,399	32626.04	
15.11 Instrumentation								
15.11.01	Instrumentation			140,784	10,000	150,784		
Instrumentation				140,784	10,000	150,784		
15.12 Maint & Protection of Traffic								
15.12.01	Maint & Protection of Traffic			2,016,233	150,000	2,166,233		
Maint & Protection of Traffic				2,016,233	150,000	2,166,233		
FLOODWAY CONTROL & DIV STRUCT				135,416,420	16,663,612	152,080,032		
30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08	Final Report Documentation			18,621,807	3,410,000	22,031,807		

PROJECT PIICD2: Phase II Tunnel - Contract D - Pompton Inlet to WS #3

FINAL ESTIMATE

SUMMARY PAGE 3

** PROJECT OWNER SUMMARY - LEVEL 3 **

	QUANTITY	UOM	CONTRACT COST	CONTINGN	TOTAL COST	UNIT	NOTES
General Design Memorandum			18,621,807	3,410,000	22,031,807		
PLANNING, ENGINEERING AND DESIGN			18,621,807	3,410,000	22,031,807		
31 CONSTRUCTION MANAGEMENT (S&I)							
31.23 Construction Contracts							
31.23.11 Supervision and Administration			6,770,821	1,690,000	8,460,821		
Construction Contracts			6,770,821	1,690,000	8,460,821		
CONSTRUCTION MANAGEMENT (S&I)			6,770,821	1,690,000	8,460,821		
Phase II Tunnel - Contract D			161,968,720	21,937,563	183,906,283		

		QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT

01	LANDS AND DAMAGES									

01.20	General Design Memorandum									
01.20.03	Real Estate Analysis Docu			1,159,673	0	0	0	0	1,159,673	
	General Design Memorandum			1,159,673	0	0	0	0	1,159,673	
	LANDS AND DAMAGES			1,159,673	0	0	0	0	1,159,673	

15	FLOODWAY CONTROL & DIV STRUCT									

15.01	Mob/Demob & Site Prep Work									
15.01.01	Mobilization and Demobili			777,564	162,883	103,029	6,943	22,801	1,073,221	
15.01.02	Site Preparation			293,476	61,477	38,886	2,621	8,606	405,066	
	Mob/Demob & Site Prep Wor			1,071,041	224,360	141,916	9,564	31,407	1,478,287	

15.02	Excavation									
15.02.01	Shaft Support			9,224,928	1,932,423	1,222,328	82,372	270,511	12,732,562	
15.02.02	Weekend Maintenance & Wat	156.00	DAY	2,198,511	460,541	291,309	19,631	64,469	3,034,460	19451.67
15.02.03	Setup & Breakdown TBM			592,461	124,108	78,503	5,290	17,373	817,735	
15.02.04	Drill & Blast Start Ch/Ta	46964.00	CY	2,971,802	622,528	393,772	26,536	87,145	4,101,784	87.34
15.02.06	Mole Tunnel - Sandstone &	1191158	CY	42,353,209	8,872,084	5,611,916	378,186	1,241,960	58,457,355	49.08
15.02.07	Mole Tunnel - Basalt	123269	CY	5,049,584	1,057,779	669,084	45,089	148,073	6,969,610	56.54
	Excavation			62,390,495	13,069,463	8,266,912	557,105	1,829,531	86,113,506	

15.03	Rockbolts									
15.03.01	Rockbolts	46757.00	EA	5,905,286	1,237,030	782,467	52,730	173,166	8,150,679	174.32
	Rockbolts	46757.00	EA	5,905,286	1,237,030	782,467	52,730	173,166	8,150,679	174.32

15.04	Grout Inflows									
15.04.01	Grout Inflows	143.00	DAY	4,216,514	883,269	558,700	37,651	123,645	5,819,778	40697.75
	Grout Inflows	143.00	DAY	4,216,514	883,269	558,700	37,651	123,645	5,819,778	40697.75

15.07	Welded Wire Fabric									
15.07.01	Welded Wire Fabric	100846	SF	588,803	123,342	78,018	5,258	17,266	812,686	8.06

		QUANTITY UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNIT
Welded Wire Fabric		100846 SF	588,803	123,342	78,018	5,258	17,266	812,686	8.06
15.08 Concrete									
15.08.01	Shaft Support		3,353,768	702,542	444,383	29,947	98,345	4,628,986	
15.08.02	Weekend Maintenance & Wat	68.00 DAY	900,169	188,566	119,275	8,038	26,396	1,242,445	18271.24
15.08.03	Set Up & Breakdown Concre	60.00 SHF	327,241	68,550	43,360	2,922	9,596	451,670	7527.83
15.08.04	Invert Clean Up	89.00 DAY	2,047,801	428,970	271,339	18,285	60,049	2,826,446	31757.82
15.08.05	Form & Place Concrete	150068 CY	14,062,861	2,945,866	1,863,368	125,572	412,378	19,410,044	129.34
Concrete		132945 CY	20,691,840	4,334,494	2,741,726	184,764	606,765	28,559,590	214.82
15.09 Contact Grout									
15.09.01	Contact Grout	47.00 DAY	1,182,029	247,610	156,622	10,555	34,662	1,631,478	34712.29
Contact Grout		47.00 DAY	1,182,029	247,610	156,622	10,555	34,662	1,631,478	34712.29
15.10 Final Clean Up									
15.10.01	Final Clean Up	23.00 DAY	502,378	105,237	66,566	4,486	14,732	693,399	30147.78
Final Clean Up		23.00 DAY	502,378	105,237	66,566	4,486	14,732	693,399	30147.78
15.11 Instrumentation									
15.11.01	Instrumentation		102,000	21,367	13,515	911	2,991	140,784	
Instrumentation			102,000	21,367	13,515	911	2,991	140,784	
15.12 Maint & Protection of Traffi									
15.12.01	Maint & Protection of Tra		1,460,791	306,004	193,559	13,044	42,836	2,016,233	
Maint & Protection of Tra			1,460,791	306,004	193,559	13,044	42,836	2,016,233	
FLOODWAY CONTROL & DIV ST			98,111,177	20,552,176	13000000	876,067	2,877,000	135,416,420	
30 PLANNING, ENGINEERING AND DESIG									
30.20 General Design Memorandum									
30.20.08	Final Report Documentatio		18,621,807	0	0	0	0	18,621,807	

	QUANTITY	UOM	TOTAL DIRECT	OVERHEAD	PROFIT	BOND	INS/PER	TOTAL COST	UNI1
General Design Memorandum			18,621,807	0	0	0	0	18,621,807	
PLANNING, ENGINEERING AND			18,621,807	0	0	0	0	18,621,807	
31 CONSTRUCTION MANAGEMENT (S&I)									
31.23 Construction Contracts									
31.23.11 Supervision and Administr			6,770,821	0	0	0	0	6,770,821	
Construction Contracts			6,770,821	0	0	0	0	6,770,821	
CONSTRUCTION MANAGEMENT (			6,770,821	0	0	0	0	6,770,821	
Phase II Tunnel - Contrac			124,663,477	20,552,176	13000000	876,067	2,877,000	161,968,720	
Contingency								21,937,563	
TOTAL INCL OWNER COSTS								183,906,283	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03	Real Estate Analysis Documents		1,159,673	0	0	0	1,159,673	

	General Design Memorandum		1,159,673	0	0	0	1,159,673	

	LANDS AND DAMAGES		1,159,673	0	0	0	1,159,673	
15 FLOODWAY CONTROL & DIV STRUCT								
15.01 Mob/Demob & Site Prep Work								
15.01.01	Mobilization and Demobilization		574,625	144,812	0	58,127	777,564	
15.01.02	Site Preparation		146,372	65,497	50,000	31,607	293,476	

	Mob/Demob & Site Prep Work		720,998	210,309	50,000	89,734	1,071,041	
15.02 Excavation								
15.02.01	Shaft Support		7,349,287	1,140,712	0	734,929	9,224,928	
15.02.02	Weekend Maintenance & Watch	156.00 DAY	1,491,846	557,478	0	149,187	2,198,511	14093.02
15.02.03	Setup & Breakdown TBM		487,799	45,884	10,000	48,778	592,461	
15.02.04	Drill & Blast Start Ch/Tail Tun	46964.00 CY	1,112,871	996,220	821,870	40,841	2,971,802	63.28
15.02.06	Mole Tunnel - Sandstone & Shale	1191158 CY	23,961,328	11834155	6,186,562	371,165	42,353,209	35.56
15.02.07	Mole Tunnel - Basalt	123269 CY	2,870,900	1,497,125	604,027	77,532	5,049,584	40.96

	Excavation		37,274,030	16071575	7,622,459	1,422,431	62,390,495	
15.03 Rockbolts								
15.03.01	Rockbolts	46757.00 EA	4,347,597	187,772	935,140	434,777	5,905,286	126.30

	Rockbolts	46757.00 EA	4,347,597	187,772	935,140	434,777	5,905,286	126.30
15.04 Grout Inflows								
15.04.01	Grout Inflows	143.00 DAY	2,440,760	363,801	1,167,881	244,072	4,216,514	29486.11

	Grout Inflows	143.00 DAY	2,440,760	363,801	1,167,881	244,072	4,216,514	29486.11
15.07 Welded Wire Fabric								
15.07.01	Welded Wire Fabric	100846 SF	376,050	74,302	100,846	37,605	588,803	5.84

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
Welded Wire Fabric		100846	SF	376,050	74,302	100,846	37,605	588,803	5.84
15.08 Concrete									
15.08.01	Shaft Support			2,712,974	369,497	0	271,296	3,353,768	
15.08.02	Weekend Maintenance & Watch	68.00	DAY	598,461	241,861	0	59,847	900,169	13237.78
15.08.03	Set Up & Breakdown Concrete Form	60.00	SHF	276,967	22,579	0	27,696	327,241	5454.02
15.08.04	Invert Clean Up	89.00	DAY	1,531,269	363,403	0	153,129	2,047,801	23009.01
15.08.05	Form & Place Concrete	150068	CY	2,923,609	1,406,154	9,440,741	292,357	14,062,861	93.71
Concrete		132945	CY	8,043,280	2,403,494	9,440,741	804,325	20,691,840	155.64
15.09 Contact Grout									
15.09.01	Contact Grout	47.00	DAY	906,136	107,420	77,861	90,613	1,182,029	25149.56
Contact Grout		47.00	DAY	906,136	107,420	77,861	90,613	1,182,029	25149.56
15.10 Final Clean Up									
15.10.01	Final Clean Up	23.00	DAY	405,205	56,652	0	40,521	502,378	21842.51
Final Clean Up		23.00	DAY	405,205	56,652	0	40,521	502,378	21842.51
15.11 Instrumentation									
15.11.01	Instrumentation			40,000	50,000	6,000	6,000	102,000	
Instrumentation				40,000	50,000	6,000	6,000	102,000	
15.12 Maint & Protection of Traffic									
15.12.01	Maint & Protection of Traffic			1,181,591	150,045	5,000	124,155	1,460,791	
Maint & Protection of Traffic				1,181,591	150,045	5,000	124,155	1,460,791	
FLOODWAY CONTROL & DIV STRUCT				55,735,648	19675368	19405927	3,294,233	98,111,177	
30 PLANNING, ENGINEERING AND DESIGN									
30.20 General Design Memorandum									
30.20.08	Final Report Documentation			18,621,807	0	0	0	18,621,807	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT
General Design Memorandum	18,621,807		0	0	0	0	18,621,807	
PLANNING, ENGINEERING AND DESIGN	18,621,807		0	0	0	0	18,621,807	
31 CONSTRUCTION MANAGEMENT (S&I)								
31.23 Construction Contracts								
31.23.11 Supervision and Administration	6,770,821		0	0	0	0	6,770,821	
Construction Contracts	6,770,821		0	0	0	0	6,770,821	
CONSTRUCTION MANAGEMENT (S&I)	6,770,821		0	0	0	0	6,770,821	
Phase II Tunnel - Contract D	82,287,948		19675368	19405927	3,294,233		124,663,477	
Prime Contractor's Total Overhead							20,552,176	
SUBTOTAL							145,215,653	
Prime Contractor's Profit							13,000,000	
SUBTOTAL							158,215,653	
Prime Contractor's Bond							876,067	
SUBTOTAL							159,091,720	
Insurance and Permits							2,877,000	
TOTAL INCL INDIRECTS							161,968,720	
Contingency							21,937,563	
TOTAL INCL OWNER COSTS							183,906,283	

ATTACHMENT M-CACES

DA - 28

TUNNEL OPERATION CENTER

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 11:14:10

Eff. Date 06/09/95

PROJECT OPCENT: Operations Center Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

TITLE PAGE 1

Operations Center Project Cost
Passaic River Flood Damage
Reduction Project
Tunnel
Operations Center

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/09/95
Effective Date of Pricing: 06/09/95
Est Construction Time: 378 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	2
PROJECT DIRECT SUMMARY - ELEMENT.....	3

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 11:14:10

Eff. Date 06/09/95

PROJECT OPCENT: Operations Center Project Cost - Passaic River Flood Damage

CONTINGENCIES

FINAL ESTIMATE

TITLE PAGE 2

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

		QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work			593,613	100,000	693,613		
	TOTAL Mob, Demob & Preparatory Work			593,613	100,000	693,613		
15.99	Associated General Items							
15.99.04	Operations Center			5,037,285	1,029,500	6,066,785		
	TOTAL Associated General Items			5,037,285	1,029,500	6,066,785		
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC			5,630,898	1,129,500	6,760,398		
30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	Final Report Documentation	1.00	EA	523,697	75,630	599,327	599327.00	
	TOTAL General Design Memorandum	1.00	EA	523,697	75,630	599,327	599327.00	
	TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	523,697	75,630	599,327	599327.00	
31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	Supervision and Administration	1.00	EA	281,550	70,388	351,938	351938.00	
	TOTAL Construction Contracts	1.00	EA	281,550	70,388	351,938	351938.00	
	TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	281,550	70,388	351,938	351938.00	
	TOTAL Operations Center Project Cost	1.00	EA	6,436,145	1,275,518	7,711,663	7711663	1,2,3,7

		QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COS1

15	FLOODWAY CONTROL-DIVERSION STRUC								
15.01	Mob, Demob & Preparatory Work			500,000	50,000	37,500	6,113	593,613	
	TOTAL Mob, Demob & Preparatory Work			500,000	50,000	37,500	6,113	593,613	

15.99	Associated General Items								
15.99.04	Operations Center			4,309,228	387,830	301,646	38,581	5,037,285	
	TOTAL Associated General Items			4,309,228	387,830	301,646	38,581	5,037,285	
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC			4,809,228	437,830	339,146	44,694	5,630,898	

30	PLANNING, ENGINEERING AND DESIGN								
30.20	General Design Memorandum								
30.20.08	Final Report Documentation	1.00	EA	523,697	0	0	0	523,697	523697.00
	TOTAL General Design Memorandum	1.00	EA	523,697	0	0	0	523,697	523697.00
	TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	523,697	0	0	0	523,697	523697.00

31	CONSTRUCTION MANAGEMENT								
31.23	Construction Contracts								
31.23.11	Supervision and Administration	1.00	EA	281,550	0	0	0	281,550	281550.00
	TOTAL Construction Contracts	1.00	EA	281,550	0	0	0	281,550	281550.00
	TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	281,550	0	0	0	281,550	281550.00
	TOTAL Operations Center Project Cost	1.00	EA	5,614,475	437,830	339,146	44,694	6,436,145	6436145

	CONTING							1,275,518	
	TOTAL INCL OWNER COSTS							7,711,663	

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01 Mob, Demob & Preparatory Work			250,000	250,000	0	0	500,000	
TOTAL Mob, Demob & Preparatory Work			250,000	250,000	0	0	500,000	

15.99 Associated General Items								
15.99.04 Operations Center			1,753,292	234,162	2,180,774	141,000	4,309,228	
TOTAL Associated General Items			1,753,292	234,162	2,180,774	141,000	4,309,228	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			2,003,292	484,162	2,180,774	141,000	4,809,228	

30 PLANNING, ENGINEERING AND DESIGN								
30.20 General Design Memorandum								
30.20.08 Final Report Documentation	1.00	EA	523,697	0	0	0	523,697	523697.00
TOTAL General Design Memorandum	1.00	EA	523,697	0	0	0	523,697	523697.00
TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	523,697	0	0	0	523,697	523697.00

31 CONSTRUCTION MANAGEMENT								
31.23 Construction Contracts								
31.23.11 Supervision and Administration	1.00	EA	281,550	0	0	0	281,550	281550.00
TOTAL Construction Contracts	1.00	EA	281,550	0	0	0	281,550	281550.00
TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	281,550	0	0	0	281,550	281550.00
TOTAL Operations Center Project Cost	1.00	EA	2,808,539	484,162	2,180,774	141,000	5,614,475	5614475

OVERHEAD							437,830	

SUBTOTAL							6,052,305	
PROFIT							339,146	

SUBTOTAL							6,391,451	
BOND							44,694	

TOTAL INCL INDIRECTS							6,436,145	
CONTING							1,275,518	

Fri 11 Aug 1995

U.S. Army Corps of Engineers

TIME 11:14:10

Eff. Date 06/09/95

PROJECT OPCENT: Operations Center Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COS.
TOTAL INCL OWNER COSTS							7,711,663	

ATTACHMENT M-CACES

DA - 29

RAMAPO CHANNEL MODIFICATION

Tue 08 Aug 1995

U.S. Army Corps of Engineers
PROJECT RAMRIV: Ramapo Channel Mod Project Cost - Passaic River
FINAL ESTIMATE

TIME 15:44:30

TITLE PAGE 1

Ramapo Channel Mod Project Cost
Passaic River
Flood Damage Reduction Project
Ramapo River
Channel Modification

Designed By: Tech Eng Br, CENAN-PR-T
Estimated By: Associated Cost Engineers, Inc.

Prepared By: Bill Porter-Carlton, ACE
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/27/95
Est Construction Time: 315 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

Tue 08 Aug 1995

U.S. Army Corps of Engineers

TIME 15:44:30

PROJECT RAMRIV: Ramapo Channel Mod Project Cost - Passaic River

TABLE OF CONTENTS

FINAL ESTIMATE

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	2
PROJECT DIRECT SUMMARY - LEVEL 3.....	4

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

RAMAPO RIVER CHANNEL MODIFICATIONS

NOTES, QUALIFICATIONS AND ASSUMPTIONS

SCOPE OF WORK:

The Ramapo River (Reach 11) is part of the Passaic River Flood Damage Reduction Project. The total improvement length is 5,385 linear feet at a depth of cut from 0 to 7 feet. The bottom width varies from 50 feet to 74 feet. A total of 298,992 cubic yards will be removed from the river. A temporary easement 20' wide times the 5,385 linear footage of the improvement (107,700 square feet or 2.47 acres) needs to be cleared on one side of the river for equipment access. The equipment consists of the crane with dragline equipment and the trucks used to remove the spoils. After the dredging is completed, the area will be graded and seeded.

PROJECT RAMRIV: Ramapo Channel Mod Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 1

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL CST	UNIT

01 LANDS AND DAMAGES							
01_20 General Design Memorandum							
01_20.03	Real Estate Analysis Documents	1.00	EA	290,268	43,540	333,808	333808
	General Design Memorandum	1.00	EA	290,268	43,540	333,808	333808
	LANDS AND DAMAGES	1.00	EA	290,268	43,540	333,808	333808
09 CHANNELS AND CANALS							
09_01 Channels							
09_01.01	Mob, Demob & Preparatory Work	5385.00	LF	12,502	2,475	14,977	2.78
09_01.02	Green Acres Mitigation			3,023	453	3,477	
09_01.13	Traffic Control	5385.00	LF	103,848	20,560	124,408	23.10
09_01.15	Mechanical Dredging	298992.20	LF	2,855,927	565,410	3,421,337	11.44
09_01.AA	Bank Stabilize, Dikes & Jetties	5385.00	LF	1,447,417	286,557	1,733,974	322.00
	Channels	1.00	EA	4,422,718	875,455	5,298,173	5298173
	CHANNELS AND CANALS	1.00	EA	4,422,718	875,455	5,298,173	5298173
30 PLANNING, ENGINEERING AND DESIGN							
30_20 General Design Memorandum							
30_20.08	Final Report Documentation			541,280	55,194	596,474	
	General Design Memorandum	1.00	EA	541,280	55,194	596,474	596474
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	541,280	55,194	596,474	596474
31 CONSTRUCTION MANAGEMENT							
31_23 Construction Contracts							
31_23.11	Supervision and Administration			331,704	49,756	381,460	
	Construction Contracts	1.00	EA	331,704	49,756	381,460	381460
	CONSTRUCTION MANAGEMENT	1.00	EA	331,704	49,756	381,460	381460
	Ramapo Channel Mod Project Cost	1.00	EA	5,585,970	1,023,946	6,609,915	6609915

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNI1

01 LANDS AND DAMAGES												
01_20 General Design Memorandum												
01_20.03	Real Estate Analysis Documents	1.00	EA	290,268	0	0	0	0	0	290,268	290268	
	General Design Memorandum	1.00	EA	290,268	0	0	0	0	0	290,268	290268	
	LANDS AND DAMAGES	1.00	EA	290,268	0	0	0	0	0	290,268	290268	
09 CHANNELS AND CANALS												
09_01 Channels												
09_01.01	Mob, Demob & Preparatory Work	5385.00	LF	10,422	625	442	830	59	124	12,502	2.32	
09_01.02	Green Acres Mitigation			3,023	0	0	0	0	0	3,023		
09_01.13	Traffic Control	5385.00	LF	86,569	5,194	3,671	6,895	491	1,028	103,848	19.28	
09_01.15	Mechanical Dredging	298992.20	LF	2,380,730	142,844	100,943	189,621	13,512	28,277	2,855,927	9.55	
09_01.AA	Bank Stabilize, Dikes & Jetties	5385.00	LF	1,206,582	72,395	51,159	96,102	6,848	14,331	1,447,417	268.79	
	Channels	1.00	EA	3,687,326	221,058	156,214	293,449	20,911	43,759	4,422,718	44227.	
	CHANNELS AND CANALS	1.00	EA	3,687,326	221,058	156,214	293,449	20,911	43,759	4,422,718	4422718	
30 PLANNING, ENGINEERING AND DESIGN												
30_20 General Design Memorandum												
30_20.08	Final Report Documentation			541,280	0	0	0	0	0	541,280		
	General Design Memorandum	1.00	EA	541,280	0	0	0	0	0	541,280	541280	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	541,280	0	0	0	0	0	541,280	541280	
31 CONSTRUCTION MANAGEMENT												
31_23 Construction Contracts												
31_23.11	Supervision and Administration			331,704	0	0	0	0	0	331,704		
	Construction Contracts	1.00	EA	331,704	0	0	0	0	0	331,704	331704	
	CONSTRUCTION MANAGEMENT	1.00	EA	331,704	0	0	0	0	0	331,704	331704	
	Ramapo Channel Mod Project Cost Contingency	1.00	EA	4,850,578	221,058	156,214	293,449	20,911	43,759	5,585,970	55859.	1,023,946

Tue 08 Aug 1995

U.S. Army Corps of Engineers

TIME 15:44:30

PROJECT RAMRIV: Ramapo Channel Mod Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 3

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT	

TOTAL INCL OWNER COSTS										6,609,915		

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

01	LANDS AND DAMAGES								
01_20	General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	290,268	0	0	290,268		290268
	General Design Memorandum	1.00	EA	290,268	0	0	290,268		290268
	LANDS AND DAMAGES	1.00	EA	290,268	0	0	290,268		290268
09	CHANNELS AND CANALS								
09_01	Channels								
09_01.01	Mob, Demob & Preparatory Work	5385.00	LF	7,295	3,127	0	10,422		1.94
09_01.02	Green Acres Mitigation			3,023	0	0	3,023		
09_01.13	Traffic Control	5385.00	LF	83,011	3,558	0	86,569		16.08
09_01.15	Mechanical Dredging	298992.20	LF	390,814	1092939	896,977	2,380,730		7.96
09_01.AA	Bank Stabilize, Dikes & Jetties	5385.00	LF	208,024	42,662	955,896	1,206,582		224.06
	Channels	1.00	EA	692,167	1142286	1,852,872	3,687,326		36873
	CHANNELS AND CANALS	1.00	EA	692,167	1142286	1,852,872	3,687,326		3687326
30	PLANNING, ENGINEERING AND DESIGN								
30_20	General Design Memorandum								
30_20.08	Final Report Documentation			541,280	0	0	541,280		
	General Design Memorandum	1.00	EA	541,280	0	0	541,280		541280
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	541,280	0	0	541,280		541280
31	CONSTRUCTION MANAGEMENT								
31_23	Construction Contracts								
31_23.11	Supervision and Administration			331,704	0	0	331,704		
	Construction Contracts	1.00	EA	331,704	0	0	331,704		331704
	CONSTRUCTION MANAGEMENT	1.00	EA	331,704	0	0	331,704		331704
	Ramapo Channel Mod Project Cost	1.00	EA	1,855,419	1142286	1,852,872	4,850,578		48505.
	Prime Contractor's Field Overhead						221,058		

PROJECT RAMRIV: Ramapo Channel Mod Project Cost - Passaic River

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT
SUBTOTAL						5,071,636		
Prime's Home Office Expense						156,214		
SUBTOTAL						5,227,850		
Prime Contractor's Profit						293,449		
SUBTOTAL						5,521,299		
Prime Contractor's Bond						20,911		
SUBTOTAL						5,542,210		
Insurance and Permits						43,759		
TOTAL INCL INDIRECTS						5,585,970		
Contingency						1,023,946		
TOTAL INCL OWNER COSTS						6,609,915		

ATTACHMENT M-CACES

DA - 30

PEQUANNOCK CHANNEL MODIFICATION

Wed 09 Aug 1995

U.S. Army Corps of Engineers

TIME 09:52:12

PROJECT PEQRIV: Pequannock Ch Mod Project Cost - Passaic River

FINAL ESTIMATE

TITLE PAGE 1

Pequannock Ch Mod Project Cost
Passaic River
Flood Damage Reduction Project
Pequannock River
Channel Modification

Designed By: Tech Eng Br, CENAN-PR-T
Estimated By: Associated Cost Engineers, Inc.

Prepared By: Bill Porter-Carlton, ACE
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/27/95
Est Construction Time: 336 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

PEQUANNOCK RIVER CHANNEL MODIFICATIONS

NOTES, QUALIFICATIONS AND ASSUMPTIONS

SCOPE OF WORK:

The Pequannock River (Reach 9 & 10) is part of the Passaic River Flood Damage Reduction Project. The total improvement length is 4,735 linear feet at a depth of cut from 0 to 7 feet. The bottom width varies from 50 feet to 74 feet. A total of 690,256 cubic yards will be removed from the river. A temporary easement 20' wide times the 4,735 linear footage of the improvement (94,700 square feet or 2.17 acres) needs to be cleared on one side of the river for equipment access. The equipment consists of the crane with dragline equipment and the trucks used to remove the spoils. After the dredging is completed, the area will be graded and seeded.

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	CST	UNIT

01	LANDS AND DAMAGES							
01_20	General Design Memorandum							
01_20.03	Real Estate Analysis Documents	1.00	EA	438,462	65,769	504,231		504231
	General Design Memorandum	1.00	EA	438,462	65,769	504,231		504231
	LANDS AND DAMAGES	1.00	EA	438,462	65,769	504,231		504231
09	CHANNELS AND CANALS							
09_01	Channels							
09_01.01	Mob, Demob & Preparatory Work	4735.00	LF	10,989	2,177	13,166		2.78
09_01.02	Green Acres Mitigation			3,581	537	4,118		
09_01.13	Traffic Control	4735.00	LF	103,814	20,568	124,382		26.27
09_01.15	Mechanical Dredging	690256.62	LF	5,748,845	1,139,013	6,887,858		9.98
09_01.AA	Bank Stabilize, Dikes & Jetties	4735.00	LF	445,364	88,240	533,604		112.69
	Channels	1.00	EA	6,312,593	1,250,535	7,563,128		7563128
	CHANNELS AND CANALS	1.00	EA	6,312,593	1,250,535	7,563,128		7563128
14	RECREATION FACILITIES							
14_00	Recreation Facilities							
14_00.72	Day Use Areas			6,850	1,028	7,878		
	Recreation Facilities			6,850	1,028	7,878		
	RECREATION FACILITIES			6,850	1,028	7,878		
30	PLANNING, ENGINEERING AND DESIGN							
30_20	General Design Memorandum							
30_20.08	Final Report Documentation			773,478	78,870	852,348		
	General Design Memorandum	1.00	EA	773,478	78,870	852,348		852348
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	773,478	78,870	852,348		852348
31	CONSTRUCTION MANAGEMENT							

PROJECT PEQRIV: Pequannock Ch Mod Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	CST	UNIT

31_23	Construction Contracts							
31_23.11	Supervision and Administration			473,958	71,094	545,052		
	Construction Contracts	1.00	EA	473,958	71,094	545,052		545052
	CONSTRUCTION MANAGEMENT	1.00	EA	473,958	71,094	545,052		545052
	Pequannock Ch Mod Project Cost	1.00	EA	8,005,341	1,467,296	9,472,636		9472636

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT

01 LANDS AND DAMAGES												
01_20 General Design Memorandum												
01_20.03	Real Estate Analysis Documents	1.00	EA	438,462	0	0	0	0	0	438,462		438462
	General Design Memorandum	1.00	EA	438,462	0	0	0	0	0	438,462		438462
	LANDS AND DAMAGES	1.00	EA	438,462	0	0	0	0	0	438,462		438462
09 CHANNELS AND CANALS												
09_01 Channels												
09_01.01	Mob, Demob & Preparatory Work	4735.00	LF	9,164	550	389	730	48	109	10,989		2.32
09_01.02	Green Acres Mitigation			3,581	0	0	0	0	0	3,581		
09_01.13	Traffic Control	4735.00	LF	86,569	5,194	3,671	6,895	457	1,028	103,814		21.92
09_01.15	Mechanical Dredging	690256.62	LF	4,793,900	287,634	203,261	381,826	25,305	56,919	5,748,845		8.33
09_01.AA	Bank Stabilize, Dikes & Jetties	4735.00	LF	371,384	22,283	15,747	29,580	1,960	4,410	445,364		94.06
	Channels	1.00	EA	5,264,597	315,661	223,067	419,032	27,770	62,465	6,312,593		6312593
	CHANNELS AND CANALS	1.00	EA	5,264,597	315,661	223,067	419,032	27,770	62,465	6,312,593		6312593
14 RECREATION FACILITIES												
14_00 Recreation Facilities												
14_00.72	Day Use Areas			6,850	0	0	0	0	0	6,850		
	Recreation Facilities			6,850	0	0	0	0	0	6,850		
	RECREATION FACILITIES			6,850	0	0	0	0	0	6,850		
30 PLANNING, ENGINEERING AND DESIGN												
30_20 General Design Memorandum												
30_20.08	Final Report Documentation			773,478	0	0	0	0	0	773,478		
	General Design Memorandum	1.00	EA	773,478	0	0	0	0	0	773,478		773478
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	773,478	0	0	0	0	0	773,478		773478
31 CONSTRUCTION MANAGEMENT												

PROJECT PEQRIV: Pequannock Ch Mod Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT

31_23 Construction Contracts												
31_23.11		Supervision and Administration	473,958		0	0	0	0	0	473,958		
		Construction Contracts	1.00	EA	473,958	0	0	0	0	473,958	473958	
		CONSTRUCTION MANAGEMENT	1.00	EA	473,958	0	0	0	0	473,958	473958	
		Pequannock Ch Mod Project Cost	1.00	EA	6,957,345	315,661	223,067	419,032	27,770	62,465	8,005,341	8005341
		Contingency								1,467,296		
		TOTAL INCL OWNER COSTS								9,472,636		

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

01	LANDS AND DAMAGES								
01_20	General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	438,462	0	0	438,462		438462
	General Design Memorandum	1.00	EA	438,462	0	0	438,462		438462
	LANDS AND DAMAGES	1.00	EA	438,462	0	0	438,462		438462
09	CHANNELS AND CANALS								
09_01	Channels								
09_01.01	Mob, Demob & Preparatory Work	4735.00	LF	6,414	2,750	0	9,164		1.94
09_01.02	Green Acres Mitigation			3,581	0	0	3,581		
09_01.13	Traffic Control	4735.00	LF	83,011	3,558	0	86,569		18.28
09_01.15	Mechanical Dredging	690256.62	LF	660,399	2062731	2,070,770	4,793,900		6.95
09_01.AA	Bank Stabilize, Dikes & Jetties	4735.00	LF	127,194	29,574	214,616	371,384		78.43
	Channels	1.00	EA	880,598	2098613	2,285,386	5,264,597		5264597
	CHANNELS AND CANALS	1.00	EA	880,598	2098613	2,285,386	5,264,597		5264597
14	RECREATION FACILITIES								
14_00	Recreation Facilities								
14_00.72	Day Use Areas			4,115	0	2,735	6,850		
	Recreation Facilities			4,115	0	2,735	6,850		
	RECREATION FACILITIES			4,115	0	2,735	6,850		
30	PLANNING, ENGINEERING AND DESIGN								
30_20	General Design Memorandum								
30_20.08	Final Report Documentation			773,478	0	0	773,478		
	General Design Memorandum	1.00	EA	773,478	0	0	773,478		773478
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	773,478	0	0	773,478		773478
31	CONSTRUCTION MANAGEMENT								

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

31_23	Construction Contracts								
31_23.11	Supervision and Administration			473,958	0	0	473,958		
	Construction Contracts	1.00	EA	473,958	0	0	473,958		473958
	CONSTRUCTION MANAGEMENT	1.00	EA	473,958	0	0	473,958		473958
	Pequannock Ch Mod Project Cost	1.00	EA	2,570,611	2098613	2,288,121	6,957,345		6957345
	Prime Contractor's Field Overhead						315,661		
	SUBTOTAL						7,273,006		
	Prime's Home Office Expense						223,067		
	SUBTOTAL						7,496,073		
	Prime Contractor's Profit						419,032		
	SUBTOTAL						7,915,105		
	Prime Contractor's Bond						27,770		
	SUBTOTAL						7,942,875		
	Insurance and Permits						62,465		
	TOTAL INCL INDIRECTS						8,005,341		
	Contingency						1,467,296		
	TOTAL INCL OWNER COSTS						9,472,636		

ATTACHMENT M-CACES

DA - 31

PEQUANNOCK - RAMAPO LEVEE/FLOODWALL SYSTEM

Wed 09 Aug 1995

U.S. Army Corps of Engineers

TIME 11:36:14

PROJECT PEQRAL: Pequannock-Ramapo Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

TITLE PAGE 1

Pequannock-Ramapo Project Cost
Passaic River Flood Damage
Reduction Project
Pequannock-Ramapo
Levee/Floodwall System

Designed By: Tech Engineering Br, CENAN-PR-T
Estimated By: Associated Cost Engineers, Inc.

Prepared By: Bill Porter-Carlton, ACE
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/23/95

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

PROJECT PEQRAL: Pequannock-Ramapo Project Cost - Passaic River Flood Damage
FINAL ESTIMATE

TABLE OF CONTENTS

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

NOTES, QUALIFICATIONS AND ASSUMPTIONS

SCOPE OF WORK:

This effort involves the construction of a 6 ft. high levee and floodwall to protect the Pequannock & Ramapo River Drainage Area.

The length of the floodwall is 2,910 feet long and the levee length is 2,200 feet.

Levee System:

The levee length is 2,200 feet. The levee permanent easement is calculated by using 6 times the levee height plus 10 feet. The height varies over 27 stations from .4 feet to 13.9 feet with an average height of 6 ft. The structural fill is to be imported to the site.

Flood Wall System:

The flood wall length is 2,910 feet. The flood wall permanent easement is calculated by using the flood wall system length times 10 feet. The flood wall is 2' wide with an average sheet piling above ground height of 5.7 feet. The sheet piling is a total of 10.75 feet in length. The sheet piling will have a continuous cast in place concrete cap with the appropriate reinforcing steel.

Traffic control is required into and out of the construction area.

Silt fences will be required.

Grub trees and stumps from the permanent and temporary easement areas. All waste materials will be hauled to approved landfills after all organic material is chipped.

Topsoil will be striped to a depth of 5" from the easement areas. The topsoil is to be stockpiled for future placement on the levee. The topsoil is to be spread to a depth of 4" over the new levee area. Additional topsoil will be imported.

The area will be seeded and fertilized.

Riprap will be 12" thick on the embankment side facing the stream.

The flood wall will require excavating a 3' x 2' trench for the concrete footing to be placed around the sheet piling after the piling has been driven.

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	CST UNIT

01 LANDS AND DAMAGES						
01_20 General Design Memorandum						
01_20.03	Real Estate Analysis Documents	1.00	EA	335,081	50,262	385,343 385343
	General Design Memorandum	1.00	EA	335,081	50,262	385,343 385343
	LANDS AND DAMAGES	1.00	EA	335,081	50,262	385,343 385343
11 LEVEES AND FLOODWALLS						
11_01 Levees						
11_01.01	Mob, Demob & Preparatory Work			112,782	16,916	129,698
11_01.03	Care & Diversion of Water			489,205	73,381	562,586
	Levees			601,987	90,297	692,284
11_02 Floodwalls						
11_02.01	Mob, Demob & Preparatory Work			32,750	4,913	37,663
11_02.03	Care & Diversion of Water			1,347,446	202,117	1,549,563
11_02.99	Associated General Items	1.00	EA	286,934	47,000	333,934 333934
	Floodwalls			1,667,130	254,030	1,921,160
11_03 Beautification						
	Beautification			49,193	7,379	56,572
	LEVEES AND FLOODWALLS	1.00	EA	2,318,309	351,706	2,670,015 2670015
13 PUMPING PLANT						
13_00 Pumping Plant						
13_00.99	Associated General Items	1.00	EA	90,030	15,000	105,030 105030
	Pumping Plant	1.00	EA	90,030	15,000	105,030 105030
	PUMPING PLANT	1.00	EA	90,030	15,000	105,030 105030
14 RECREATION FACILITIES						

PROJECT PEQRAL: Pequannock-Ramapo Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - LEVEL 3 **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	CST UNIT

14_00 Recreation Facilities						
14_00.72	Day Use Areas	1.00 EA	26,298	3,945	30,243	30243
	Recreation Facilities	1.00 EA	26,298	3,945	30,243	30243
	RECREATION FACILITIES	1.00 EA	26,298	3,945	30,243	30243
30 PLANNING, ENGINEERING AND DESIGN						
30_20 General Design Memorandum						
30_20.08	Final Report Documentation	1.00 EA	287,296	29,329	316,625	316625
	General Design Memorandum	1.00 EA	287,296	29,329	316,625	316625
	PLANNING, ENGINEERING AND DESIGN	1.00 EA	287,296	29,329	316,625	316625
31 CONSTRUCTION MANAGEMENT						
31_23 Construction Contracts						
31_23.11	Supervision and Administration	1.00 EA	182,598	27,390	209,988	209988
	Construction Contracts	1.00 EA	182,598	27,390	209,988	209988
	CONSTRUCTION MANAGEMENT	1.00 EA	182,598	27,390	209,988	209988
	Pequannock-Ramapo Project Cost	87000.00 LF	3,239,612	477,632	3,717,244	42.73

		QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT

01	LANDS AND DAMAGES												
01_20	General Design Memorandum												
01_20.03	Real Estate Analysis Documents	1.00	EA	335,081	0	0	0	0	0	0	335,081		335081
	General Design Memorandum	1.00	EA	335,081	0	0	0	0	0	0	335,081		335081
	LANDS AND DAMAGES	1.00	EA	335,081	0	0	0	0	0	0	335,081		335081
11	LEVEES AND FLOODWALLS												
11_01	Levees												
11_01.01	Mob, Demob & Preparatory Work			93,954	5,637	3,984	7,483	607	1,117		112,782		
11_01.03	Care & Diversion of Water			407,535	24,452	17,279	32,460	2,635	4,844		489,205		
	Levees			501,489	30,089	21,263	39,943	3,242	5,960		601,987		
11_02	Floodwalls												
11_02.01	Mob, Demob & Preparatory Work			27,282	1,637	1,157	2,173	176	324		32,750		
11_02.03	Care & Diversion of Water			1,122,499	67,350	47,594	89,405	7,257	13,341		1,347,446		
11_02.99	Associated General Items	1.00	EA	239,033	14,342	10,135	19,039	1,545	2,841		286,934		286934
	Floodwalls			1,388,814	83,329	58,886	110,617	8,979	16,506		1,667,130		
11_03	Beautification												
	Beautification			49,193	0	0	0	0	0		49,193		
	LEVEES AND FLOODWALLS	1.00	EA	1,939,495	113,418	80,149	150,560	12,221	22,467		2,318,309		2318309
13	PUMPING PLANT												
13_00	Pumping Plant												
13_00.99	Associated General Items	1.00	EA	75,000	4,500	3,180	5,974	485	891		90,030		90030
	Pumping Plant	1.00	EA	75,000	4,500	3,180	5,974	485	891		90,030		90030
	PUMPING PLANT	1.00	EA	75,000	4,500	3,180	5,974	485	891		90,030		90030
14	RECREATION FACILITIES												

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT

14_00 Recreation Facilities												
14_00.72	Day Use Areas	1.00	EA	26,298	0	0	0	0	0	26,298	26298	
	Recreation Facilities	1.00	EA	26,298	0	0	0	0	0	26,298	26298	
	RECREATION FACILITIES	1.00	EA	26,298	0	0	0	0	0	26,298	26298	
30 PLANNING, ENGINEERING AND DESIGN												
30_20 General Design Memorandum												
30_20.08	Final Report Documentation	1.00	EA	287,296	0	0	0	0	0	287,296	287296	
	General Design Memorandum	1.00	EA	287,296	0	0	0	0	0	287,296	287296	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	287,296	0	0	0	0	0	287,296	287296	
31 CONSTRUCTION MANAGEMENT												
31_23 Construction Contracts												
31_23.11	Supervision and Administration	1.00	EA	182,598	0	0	0	0	0	182,598	182598	
	Construction Contracts	1.00	EA	182,598	0	0	0	0	0	182,598	182598	
	CONSTRUCTION MANAGEMENT	1.00	EA	182,598	0	0	0	0	0	182,598	182598	
	Pequannock-Ramapo Project Cost	87000.00	LF	2,845,768	117,918	83,329	156,533	12,706	23,358	3,239,612	37.24	
	Contingency									477,632	5.49	
	TOTAL INCL OWNER COSTS									3,717,244	42.73	

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

01	LANDS AND DAMAGES								
01_20	General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	335,081	0	0	335,081		335081
	General Design Memorandum	1.00	EA	335,081	0	0	335,081		335081
	LANDS AND DAMAGES	1.00	EA	335,081	0	0	335,081		335081
11	LEVEES AND FLOODWALLS								
11_01	Levees								
11_01.01	Mob, Demob & Preparatory Work			79,318	11,671	2,965	93,954		
11_01.03	Care & Diversion of Water			91,821	102,220	213,494	407,535		
	Levees			171,139	113,891	216,459	501,489		
11_02	Floodwalls								
11_02.01	Mob, Demob & Preparatory Work			11,946	15,336	0	27,282		
11_02.03	Care & Diversion of Water			443,503	121,875	557,120	1,122,499		
11_02.99	Associated General Items	1.00	EA	36,692	5,103	197,237	239,033		239033
	Floodwalls			492,142	142,315	754,357	1,388,814		
11_03	Beautification								
	Beautification			15,637	0	33,556	49,193		
	LEVEES AND FLOODWALLS	1.00	EA	678,917	256,206	1,004,372	1,939,495		1939495
13	PUMPING PLANT								
13_00	Pumping Plant								
13_00.99	Associated General Items	1.00	EA	0	0	75,000	75,000		75000
	Pumping Plant	1.00	EA	0	0	75,000	75,000		75000
	PUMPING PLANT	1.00	EA	0	0	75,000	75,000		75000
14	RECREATION FACILITIES								

PROJECT PEQRAL: Pequannock-Ramapo Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

14_00	Recreation Facilities								
14_00.72	Day Use Areas	1.00	EA	13,340	0	12,958	26,298		26298
	Recreation Facilities	1.00	EA	13,340	0	12,958	26,298		26298
	RECREATION FACILITIES	1.00	EA	13,340	0	12,958	26,298		26298

30	PLANNING, ENGINEERING AND DESIGN								
30_20	General Design Memorandum								
30_20.08	Final Report Documentation	1.00	EA	287,296	0	0	287,296		287296
	General Design Memorandum	1.00	EA	287,296	0	0	287,296		287296
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	287,296	0	0	287,296		287296
31	CONSTRUCTION MANAGEMENT								
31_23	Construction Contracts								
31_23.11	Supervision and Administration	1.00	EA	182,598	0	0	182,598		182598
	Construction Contracts	1.00	EA	182,598	0	0	182,598		182598
	CONSTRUCTION MANAGEMENT	1.00	EA	182,598	0	0	182,598		182598
	Pequannock-Ramapo Project Cost	87000.00	LF	1,497,232	256,206	1,092,330	2,845,768		32.71
	Prime Contractor's Field Overhead						117,918		1.36
	SUBTOTAL						2,963,687		34.07
	Prime's Home Office Expense						83,329		0.96
	SUBTOTAL						3,047,015		35.02
	Prime Contractor's Profit						156,533		1.80
	SUBTOTAL						3,203,549		36.82
	Prime Contractor's Bond						12,706		0.15
	SUBTOTAL						3,216,254		36.97
	Insurance and Permits						23,358		0.27
	TOTAL INCL INDIRECTS						3,239,612		37.24
	Contingency						477,632		5.49
	TOTAL INCL OWNER COSTS						3,717,244		42.11

ATTACHMENT M-CACES

DA - 32

WANAQUE CHANNEL MODIFICATION

PROJECT WANRIV: Wanaque R Channel Project Cost - Passaic River Flood Damage
FINAL ESTIMATE

Wanaque R Channel Project Cost
Passaic River Flood Damage
Reduction Project
Wanaque River
Channel Modification

Designed By: Tech Eng Br, CENAN-PR-TC
Estimated By: Associated Cost Engineers, Inc.

Prepared By: Bill Porter-Carlton, ACE
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/27/95
Est Construction Time: 231 Days

M C A C E S G O L D E D I T I O N
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	3
PROJECT DIRECT SUMMARY - LEVEL 3.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

WANAQUE RIVER CHANNEL MODIFICATIONS

NOTES, QUALIFICATIONS AND ASSUMPTIONS

SCOPE OF WORK:

The Wanaque River (Reach 8) is part of the Passaic River Flood Damage Reduction Project. The total improvement length is 5,620 linear feet at a depth of cut from 0 to 7 feet. The bottom width varies from 50 feet to 74 feet. A total of 207,610 cubic yards will be removed from the river. A temporary easement 20' wide times the 5,620 linear footage of the improvement (112,384 square feet or 2.58 acres) needs to be cleared on one side of the river for equipment access. The equipment consists of the crane with dragline equipment and the trucks used to remove the spoils. After the dredging is completed, the area will be graded and seeded.

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL CST	UNIT

01	LANDS AND DAMAGES						
01_20	General Design Memorandum						
01_20.03	Real Estate Analysis Documents	1.00	EA	181,639	27,246	208,885	208885
	General Design Memorandum	1.00	EA	181,639	27,246	208,885	208885
	LANDS AND DAMAGES	1.00	EA	181,639	27,246	208,885	208885
09	CHANNELS AND CANALS						
09_01	Channels						
09_01.01	Mob, Demob & Preparatory Work	5620.00	LF	12,867	2,502	15,369	2.73
09_01.13	Traffic Control	5620.00	LF	103,908	20,207	124,115	22.08
09_01.15	Mechanical Dredging	5620.00	LF	2,180,913	424,119	2,605,032	463.53
09_01.AA	Bank Stabilize, Dikes & Jetties	5620.00	LF	273,363	53,160	326,523	58.10
09_01.BB	Bridge Work			108,447	16,267	124,714	
	Channels	1.00	EA	2,679,498	516,255	3,195,753	3195753
	CHANNELS AND CANALS	1.00	EA	2,679,498	516,255	3,195,753	3195753
14	RECREATION FACILITIES						
14_00	Recreation Facilities						
14_00.72	Day Use Areas	1.00	EA	19,350	2,903	22,253	22253
	Recreation Facilities	1.00	EA	19,350	2,903	22,253	22253
	RECREATION FACILITIES	1.00	EA	19,350	2,903	22,253	22253
30	PLANNING, ENGINEERING AND DESIGN						
30_20	General Design Memorandum						
30_20.08	Final Report Documentation	1.00	EA	326,735	33,321	360,056	360056
	General Design Memorandum	1.00	EA	326,735	33,321	360,056	360056
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	326,735	33,321	360,056	360056
31	CONSTRUCTION MANAGEMENT						

PROJECT WANRIV: Wanaque R Channel Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 2

** PROJECT OWNER SUMMARY - LEVEL 3 **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	CST	UNIT

31_23	Construction Contracts							
31_23.11	Supervision and Administration	1.00	EA	201,062	30,159	231,221	231221	
	Construction Contracts	1.00	EA	201,062	30,159	231,221	231221	
	CONSTRUCTION MANAGEMENT	1.00	EA	201,062	30,159	231,221	231221	
	Wanaque R Channel Project Cost	1.00	EA	3,408,284	609,883	4,018,167	4018167	

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT

01 LANDS AND DAMAGES												
01_20 General Design Memorandum												
01_20.03	Real Estate Analysis Documents	1.00	EA	181,639	0	0	0	0	0	181,639	181639	

	General Design Memorandum	1.00	EA	181,639	0	0	0	0	0	181,639	181639	

	LANDS AND DAMAGES	1.00	EA	181,639	0	0	0	0	0	181,639	181639	
09 CHANNELS AND CANALS												
09_01 Channels												
09_01.01	Mob, Demob & Preparatory Work	5620.00	LF	10,720	643	455	854	68	127	12,867	2.29	
09_01.13	Traffic Control	5620.00	LF	86,569	5,194	3,671	6,895	551	1,029	103,908	18.49	
09_01.15	Mechanical Dredging	5620.00	LF	1,816,982	109,019	77,040	144,720	11,559	21,593	2,180,913	388.06	
09_01.AA	Bank Stabilize, Dikes & Jetties	5620.00	LF	227,747	13,665	9,656	18,140	1,449	2,707	273,363	48.64	
09_01.BB	Bridge Work			90,350	5,421	3,831	7,196	575	1,074	108,447		

	Channels	1.00	EA	2,232,368	133,942	94,652	177,805	14,201	26,530	2,679,498	2679498	

	CHANNELS AND CANALS	1.00	EA	2,232,368	133,942	94,652	177,805	14,201	26,530	2,679,498	2679498	
14 RECREATION FACILITIES												
14_00 Recreation Facilities												
14_00.72	Day Use Areas	1.00	EA	19,350	0	0	0	0	0	19,350	19350	

	Recreation Facilities	1.00	EA	19,350	0	0	0	0	0	19,350	19350	

	RECREATION FACILITIES	1.00	EA	19,350	0	0	0	0	0	19,350	19350	
30 PLANNING, ENGINEERING AND DESIGN												
30_20 General Design Memorandum												
30_20.08	Final Report Documentation	1.00	EA	326,735	0	0	0	0	0	326,735	326735	

	General Design Memorandum	1.00	EA	326,735	0	0	0	0	0	326,735	326735	

	PLANNING, ENGINEERING AND DESIGN	1.00	EA	326,735	0	0	0	0	0	326,735	326735	
31 CONSTRUCTION MANAGEMENT												

PROJECT WANRIV: Wanaque R Channel Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT

31_23 Construction Contracts												
31_23.11	Supervision and Administration	1.00	EA	201,062	0	0	0	0	0	201,062	201062	
	Construction Contracts	1.00	EA	201,062	0	0	0	0	0	201,062	201062	
	CONSTRUCTION MANAGEMENT	1.00	EA	201,062	0	0	0	0	0	201,062	201062	
	Wanaque R Channel Project Cost	1.00	EA	2,961,154	133,942	94,652	177,805	14,201	26,530	3,408,284	3408284	
	Contingency									609,883		
	TOTAL INCL OWNER COSTS									4,018,167		

PROJECT WANRIV: Wanaque R Channel Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 5

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

01	LANDS AND DAMAGES								
01_20	General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	181,639	0	0	181,639		181639
	General Design Memorandum	1.00	EA	181,639	0	0	181,639		181639
	LANDS AND DAMAGES	1.00	EA	181,639	0	0	181,639		181639
09	CHANNELS AND CANALS								
09_01	Channels								
09_01.01	Mob, Demob & Preparatory Work	5620.00	LF	7,503	3,216	0	10,720		1.91
09_01.13	Traffic Control	5620.00	LF	83,011	3,558	0	86,569		15.40
09_01.15	Mechanical Dredging	5620.00	LF	327,822	866,331	622,830	1,816,982		323.31
09_01.AA	Bank Stabilize, Dikes & Jetties	5620.00	LF	44,955	6,296	176,496	227,747		40.52
09_01.BB	Bridge Work			20,850	0	69,500	90,350		
	Channels	1.00	EA	484,140	879,402	868,826	2,232,368		2232368
	CHANNELS AND CANALS	1.00	EA	484,140	879,402	868,826	2,232,368		2232368
14	RECREATION FACILITIES								
14_00	Recreation Facilities								
14_00.72	Day Use Areas	1.00	EA	12,900	0	6,450	19,350		19350
	Recreation Facilities	1.00	EA	12,900	0	6,450	19,350		19350
	RECREATION FACILITIES	1.00	EA	12,900	0	6,450	19,350		19350
30	PLANNING, ENGINEERING AND DESIGN								
30_20	General Design Memorandum								
30_20.08	Final Report Documentation	1.00	EA	326,735	0	0	326,735		326735
	General Design Memorandum	1.00	EA	326,735	0	0	326,735		326735
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	326,735	0	0	326,735		326735
31	CONSTRUCTION MANAGEMENT								

PROJECT WANRIV: Wanaque R Channel Project Cost - Passaic River Flood Damage

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT DIRECT SUMMARY - LEVEL 3 **

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

31_23	Construction Contracts								
31_23.11	Supervision and Administration	1.00	EA	201,062	0	0	201,062		201062
	Construction Contracts	1.00	EA	201,062	0	0	201,062		201062
	CONSTRUCTION MANAGEMENT	1.00	EA	201,062	0	0	201,062		201062
	Wanaque R Channel Project Cost	1.00	EA	1,206,476	879,402	875,276	2,961,154		2961154
	Prime Contractor's Field Overhead						133,942		
	SUBTOTAL						3,095,096		
	Prime's Home Office Expense						94,652		
	SUBTOTAL						3,189,748		
	Prime Contractor's Profit						177,805		
	SUBTOTAL						3,367,553		
	Prime Contractor's Bond						14,201		
	SUBTOTAL						3,381,754		
	Insurance and Permits						26,530		
	TOTAL INCL INDIRECTS						3,408,284		
	Contingency						609,883		
	TOTAL INCL OWNER COSTS						4,018,167		

ATTACHMENT M-CACES

DA - 33

PEQUANNOCK WEIR

Thu 10 Aug 1995
Eff. Date 06/23/95

U.S. Army Corps of Engineers
PROJECT PEQWER: Pequannock Weir Project Cost - Passaic River
FINAL ESTIMATE

TIME 09:31:34
TITLE PAGE 1

Pequannock Weir Project Cost
Passaic River
Flood Damage Reduction Project
Pequannock Weir

Designed By: US Army Corps of Engrs, Phila.
Estimated By: Cost Engr. Br., Sterling Johnson

Prepared By: H.F.(Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/23/95
Effective Date of Pricing: 06/23/95
Est Construction Time: 252 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

MCACES GOLD EDITION
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Thu 10 Aug 1995
Eff. Date 06/23/95
TABLE OF CONTENTS

U.S. Army Corps of Engineers
PROJECT PEQWER: Pequannock Weir Project Cost - Passaic River
FINAL ESTIMATE

TIME 09:31:34
CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - Sub Feat.....	1
PROJECT INDIRECT SUMMARY - Sub Feat.....	2
PROJECT DIRECT SUMMARY - Sub Feat.....	4

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

PEQUANNOCK WEIR NOTES -

The Pequannock weir design and cost are largely based on projects in the St. Paul District. This construction sequence consists of constructing the weir first and then dismantling the existing berm. The associated dewatering cost with the weir is shown with (2) different scenarios. Prices for the Tainter Gates were based on fabrication in Alabama with shipment to the site. Freight costs were based on a rough estimate for barge and over-land shipping with unloading at the site. Material cost for the concrete, rebar and steel sheeting are based on North Jersey area prices taken from the Materials Resource Study dated September 1994. All detail cost assume that the construction will be part of a large scale project; therefore, whole production days do not always apply.

Additional Notes:

- 1 - Labor rates for Passaic are based on the labor rate database PAS93B provided by Passaic River Division, Fall 1994.
- 2 - Design and Cost are partly based on the Pineville, Kentucky Job (1986), the Harlan, Kentucky Job (1992), and a Portland District job (1986).
- 3 - Excavation is based on the footings only.
- 4 - Rebar costs are based on coated grade 60, #7. A waste factor of 16% is used because the reinforcement was not designed.
- 5 - Railroad closures include a +25% allowance for phasing.
- 6 - Costs include an allowance for contingency. They do not include an allowance for escalation to the mid-point of construction, S&A or E&D.
- 7 - Profit is calculated with the weighted guidelines and is based on a large scale project.
- 8 - Excavation and concrete items include an allowance for any additional trucking of supplies or equipment.

.....

FINAL ESTIMATE

** PROJECT OWNER SUMMARY - Sub Feat **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	AREA FAC	TOTAL COST	UNIT
G FLOODWAY CONTROL-DIVERSION STRUC								
G_1 Pequannock Weir, Location 1								
G_1.40	Weir Structure	230.00	LF	3,468,876	520,331	0	0	3,989,207 17344
G_1.45	Tainter Gate, Mechanical (4)	230.00	LF	2,841,934	426,290	0	0	3,268,224 14210
G_1.50	Tainter Gate, Electrical (4)	230.00	LF	149,872	22,481	0	0	172,353 749.36
G_1.55	Tainter Gate, Bridge	230.00	LF	2,408,513	361,277	0	0	2,769,790 12043

TOTAL	Pequannock Weir, Location 1	1.00	JOB	8,869,194	1,330,379	0	0	10,199,57310199573

TOTAL	FLOODWAY CONTROL-DIVERSION STRUC	1.00	JOB	8,869,194	1,330,379	0	0	10,199,57310199573
01 LANDS AND DAMAGES								
01_20 General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	8,340	1,251	0	0	9,591 9591.00

TOTAL	General Design Memorandum	1.00	EA	8,340	1,251	0	0	9,591 9591.00

TOTAL	LANDS AND DAMAGES	1.00	EA	8,340	1,251	0	0	9,591 9591.00
30 PLANNING, ENGINEERING AND DESIGN								
30_20 General Design Memorandum								
30_20.08	Final Report Documentation	10.00	EA	1,494,184	174,078	0	0	1,668,262 166826

TOTAL	General Design Memorandum	1.00	EA	1,494,184	174,078	0	0	1,668,262 1668262

TOTAL	PLANNING, ENGINEERING AND DESIGN	1.00	EA	1,494,184	174,078	0	0	1,668,262 1668262
31 CONSTRUCTION MANAGEMENT								
31_23 Construction Contracts								
31_23.11	Supervision and Administration	1.00	EA	665,190	99,778	0	0	764,968 764968

TOTAL	Construction Contracts	1.00	EA	665,190	99,778	0	0	764,968 764968

TOTAL	CONSTRUCTION MANAGEMENT	1.00	EA	665,190	99,778	0	0	764,968 764968

TOTAL	Pequannock Weir Project Cost	1.00	EA	11,036,908	1,605,486	0	0	12,642,39412642394

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - Sub Feat **

	QUANTY	UOM	DIRECT	FIELD OH	HOME OFC	PROFIT	BOND	INSR/PRM	TOTAL COST	UNIT	

G FLOODWAY CONTROL-DIVERSION ST											
G_1 Pequannock Weir, Location											
G_1.40	Weir Structure	230.00	LF	2,905,934	174,356	116,237	217,945	20,059	34,345	3,468,876	15082
G_1.45	Tainter Gate, Mechanica	230.00	LF	2,380,734	142,844	95,229	178,555	16,433	28,138	2,841,934	12356
G_1.50	Tainter Gate, Electrica	230.00	LF	125,550	7,533	5,022	9,416	867	1,484	149,872	651.62
G_1.55	Tainter Gate, Bridge	230.00	LF	2,017,650	121,059	80,706	151,324	13,927	23,847	2,408,513	10472

TOTAL	Pequannock Weir, Locati	1.00	JOB	7,429,868	445,792	297,195	557,240	51,285	87,814	8,869,194	8869194

TOTAL	FLOODWAY CONTROL-DIVERS	1.00	JOB	7,429,868	445,792	297,195	557,240	51,285	87,814	8,869,194	8869194

01 LANDS AND DAMAGES											
01_20 General Design Memorandum											
01_20.03	Real Estate Analysis Do	1.00	EA	8,340	0	0	0	0	0	8,340	8340.00

TOTAL	General Design Memorand	1.00	EA	8,340	0	0	0	0	0	8,340	8340.00

TOTAL	LANDS AND DAMAGES	1.00	EA	8,340	0	0	0	0	0	8,340	8340.00

30 PLANNING, ENGINEERING AND DES											
30_20 General Design Memorandum											
30_20.08	Final Report Documentat	10.00	EA	1,494,184	0	0	0	0	0	1,494,184	149418

TOTAL	General Design Memorand	1.00	EA	1,494,184	0	0	0	0	0	1,494,184	1494184

TOTAL	PLANNING, ENGINEERING A	1.00	EA	1,494,184	0	0	0	0	0	1,494,184	1494184

31 CONSTRUCTION MANAGEMENT											
31_23 Construction Contracts											
31_23.11	Supervision and Adminis	1.00	EA	665,190	0	0	0	0	0	665,190	665190

TOTAL	Construction Contracts	1.00	EA	665,190	0	0	0	0	0	665,190	665190

TOTAL	CONSTRUCTION MANAGEMENT	1.00	EA	665,190	0	0	0	0	0	665,190	665190

TOTAL	Pequannock Weir Project	1.00	EA	9,597,582	445,792	297,195	557,240	51,285	87,814	11,036,908	1103690

Contingency										1,605,486	

Thu 10 Aug 1995

U.S. Army Corps of Engineers

TIME 09:31:34

Eff. Date 06/23/95

PROJECT PEQWER: Pequannock Weir Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 3

** PROJECT INDIRECT SUMMARY - Sub Feat **

QUANTY	UOM	DIRECT	FIELD	OH	HOME	OFC	PROFIT	BOND	INSR/PRM	TOTAL COST	UNIT
TOTAL INCL OWNER COSTS										12,642,394	

** PROJECT DIRECT SUMMARY - Sub Feat **

	QUANTY	UOM	MANHRS	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST	UNIT

G FLOODWAY CONTROL-DIVERSION STRUC									
G_1 Pequannock Weir, Location 1									
G_1.40 Weir Structure	230.00	LF	27,591	1,214,290	477,903	1,213,741	0	2,905,934	12634
G_1.45 Tainter Gate, Mechanical (4)	230.00	LF	9,849	535,618	133,558	1,513,934	197,625	2,380,734	10351
G_1.50 Tainter Gate, Electrical (4)	230.00	LF	0	25,575	16,275	83,700	0	125,550	545.87
G_1.55 Tainter Gate, Bridge	230.00	LF	2,890	146,792	438,509	1,298,952	133,397	2,017,650	8772.39
TOTAL Pequannock Weir, Location 1	1.00	JOB	40,329	1,922,274	1,066,245	4,110,327	331,022	7,429,868	7429868
TOTAL FLOODWAY CONTROL-DIVERSION STRUC	1.00	JOB	40,329	1,922,274	1,066,245	4,110,327	331,022	7,429,868	7429868
01 LANDS AND DAMAGES									
01_20 General Design Memorandum									
01_20.03 Real Estate Analysis Documents	1.00	EA	0	8,340	0	0	0	8,340	8340.00
TOTAL General Design Memorandum	1.00	EA	0	8,340	0	0	0	8,340	8340.00
TOTAL LANDS AND DAMAGES	1.00	EA	0	8,340	0	0	0	8,340	8340.00
30 PLANNING, ENGINEERING AND DESIGN									
30_20 General Design Memorandum									
30_20.08 Final Report Documentation	10.00	EA	0	1,494,184	0	0	0	1,494,184	1494184
TOTAL General Design Memorandum	1.00	EA	0	1,494,184	0	0	0	1,494,184	1494184
TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	0	1,494,184	0	0	0	1,494,184	1494184
31 CONSTRUCTION MANAGEMENT									
31_23 Construction Contracts									
31_23.11 Supervision and Administration	1.00	EA	0	665,190	0	0	0	665,190	665190
TOTAL Construction Contracts	1.00	EA	0	665,190	0	0	0	665,190	665190
TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	0	665,190	0	0	0	665,190	665190
TOTAL Pequannock Weir Project Cost	1.00	EA	40,329	4,089,988	1,066,245	4,110,327	331,022	9,597,582	9597582
Prime Contractor's Field Overhead								445,792	

Thu 10 Aug 1995
Eff. Date 06/23/95

U.S. Army Corps of Engineers
PROJECT PEQWER: Pequannock Weir Project Cost - Passaic River

TIME 09:31:34

FINAL ESTIMATE

SUMMARY PAGE 5

** PROJECT DIRECT SUMMARY - Sub Feat **

	QUANTY	UOM	MANHRS	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST	UNIT
SUBTOTAL								10,043,374	
Prime's Home Office Expense								297,195	
SUBTOTAL								10,340,569	
Prime Contractor's Profit								557,240	
SUBTOTAL								10,897,809	
Prime Contractor's Bond								51,285	
SUBTOTAL								10,949,094	
Prime Contractor's Insurance/Permits								87,814	
TOTAL INCL INDIRECTS								11,036,908	
Contingency								1,605,486	
TOTAL INCL OWNER COSTS								12,642,394	

ATTACHMENT M-CACES

DA - 34

VENT/HOOK HOLE SHAFT #5

Thu 10 Aug 1995
Eff. Date 06/09/95

U.S. Army Corps of Engineers
PROJECT SHFT05: Tunnel Shaft #5 Project Cost - Passaic River
FINAL ESTIMATE

TIME 11:10:38

TITLE PAGE 1

Tunnel Shaft #5 Project Cost
Passaic River
Flood damage Reduction Project
Main Tunnel
"Hook Hole" Shaft #5

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/09/95
Effective Date of Pricing: 06/09/95
Est Construction Time: 189 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	3
PROJECT DIRECT SUMMARY - ELEMENT.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

** PROJECT OWNER SUMMARY - ELEMENT **

		QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	39,722	5,958	45,680	45680.30	
	TOTAL General Design Memorandum	1.00	EA	39,722	5,958	45,680	45680.30	
	TOTAL LANDS AND DAMAGES	1.00	EA	39,722	5,958	45,680	45680.30	

15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work			59,662	0	59,662		
	TOTAL Mob, Demob & Preparatory Work			59,662	0	59,662		

15.10	Earthwork for Structures							
15.10.02	Site Work			907,566	185,000	1,092,566		
	TOTAL Earthwork for Structures			907,566	185,000	1,092,566		

15.12	Seepage Control							
15.12.02	Site Work			122,367	25,000	147,367		
	TOTAL Seepage Control			122,367	25,000	147,367		

15.25	Embedded Metal Work							
15.25.05	Metals			18,556	3,000	21,556		
	TOTAL Embedded Metal Work			18,556	3,000	21,556		

15.99	Associated General Items							
15.99.01	Concrete above ground			11,992	2,000	13,992		
15.99.02	Site Work			8,558	1,500	10,058		
15.99.03	Concrete below ground			122,751	25,000	147,751		
	TOTAL Associated General Items			143,301	28,500	171,801		
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC			1,251,453	241,500	1,492,953		

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation	1.00	EA	115,631	16,706	132,337	132337.00
	TOTAL General Design Memorandum	1.00	EA	115,631	16,706	132,337	132337.00
	TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	EA	115,631	16,706	132,337	132337.00
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration	1.00	EA	62,550	15,638	78,188	78188.00
	TOTAL Construction Contracts	1.00	EA	62,550	15,638	78,188	78188.00
	TOTAL CONSTRUCTION MANAGEMENT	1.00	EA	62,550	15,638	78,188	78188.00
	TOTAL Tunnel Shaft #5 Project Cost	1.00	EA	1,469,356	279,802	1,749,158	1749158 1,2,3

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES								
01.20 General Design Memorandum								
01.20.03 Real Estate Analysis Documents	1.00	EA	39,722	0	0	0	39,722	39722.00
TOTAL General Design Memorandum	1.00	EA	39,722	0	0	0	39,722	39722.00
TOTAL LANDS AND DAMAGES	1.00	EA	39,722	0	0	0	39,722	39722.00

15 FLOODWAY CONTROL-DIVERSION STRUC								
15.01 Mob, Demob & Preparatory Work			50,000	5,000	4,125	537	59,662	
TOTAL Mob, Demob & Preparatory Work			50,000	5,000	4,125	537	59,662	
15.10 Earthwork for Structures								
15.10.02 Site Work			760,587	76,059	62,748	8,172	907,566	
TOTAL Earthwork for Structures			760,587	76,059	62,748	8,172	907,566	
15.12 Seepage Control								
15.12.02 Site Work			103,456	9,311	7,894	1,707	122,367	
TOTAL Seepage Control			103,456	9,311	7,894	1,707	122,367	
15.25 Embedded Metal Work								
15.25.05 Metals			15,675	1,411	1,196	274	18,556	
TOTAL Embedded Metal Work			15,675	1,411	1,196	274	18,556	
15.99 Associated General Items								
15.99.01 Concrete above ground			10,142	913	774	163	11,992	
15.99.02 Site Work			7,229	651	552	126	8,558	
15.99.03 Concrete below ground			103,820	9,344	7,921	1,666	122,751	
TOTAL Associated General Items			121,192	10,907	9,247	1,956	143,301	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC			1,050,909	102,688	85,210	12,646	1,251,453	

Thu 10 Aug 1995
 Eff. Date 06/09/95

U.S. Army Corps of Engineers
 PROJECT SHFT05: Tunnel Shaft #5 Project Cost - Passaic River

TIME 11:10:38

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	1.00	EA	115,631	0	0	0	115,631	115631.00

	TOTAL	1.00	115,631	0	0	0	115,631	115631.00

	TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	115,631	0	0	0	115,631	115631.00

31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	1.00	EA	62,550	0	0	0	62,550	62550.00

	TOTAL Construction Contracts	1.00	62,550	0	0	0	62,550	62550.00

	TOTAL CONSTRUCTION MANAGEMENT	1.00	62,550	0	0	0	62,550	62550.00

	TOTAL Tunnel Shaft #5 Project Cost	1.00	1,268,812	102,688	85,210	12,646	1,469,356	1469356.00

	CONTING						279,802	

	TOTAL INCL OWNER COSTS						1,749,158	

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - ELEMENT **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES									
01.20 General Design Memorandum									
01.20.03	Real Estate Analysis Documents	1.00	EA	39,722	0	0	0	39,722	39722.00

	TOTAL General Design Memorandum	1.00	EA	39,722	0	0	0	39,722	39722.00

	TOTAL LANDS AND DAMAGES	1.00	EA	39,722	0	0	0	39,722	39722.00

15 FLOODWAY CONTROL-DIVERSION STRUC									
15.01 Mob, Demob & Preparatory Work									
				25,000	25,000	0	0	50,000	

	TOTAL Mob, Demob & Preparatory Work			25,000	25,000	0	0	50,000	

15.10 Earthwork for Structures									
15.10.02 Site Work									
				579,191	159,576	21,820	0	760,587	

	TOTAL Earthwork for Structures			579,191	159,576	21,820	0	760,587	

15.12 Seepage Control									
15.12.02 Site Work									
				0	0	103,456	0	103,456	

	TOTAL Seepage Control			0	0	103,456	0	103,456	

15.25 Embedded Metal Work									
15.25.05 Metals									
				2,850	2,850	9,975	0	15,675	

	TOTAL Embedded Metal Work			2,850	2,850	9,975	0	15,675	

15.99 Associated General Items									
15.99.01 Concrete above ground									
				6,374	226	3,542	0	10,142	
15.99.02 Site Work									
				3,898	477	2,855	0	7,229	
15.99.03 Concrete below ground									
				69,080	11,967	22,773	0	103,820	

	TOTAL Associated General Items			79,351	12,671	29,170	0	121,192	

	TOTAL FLOODWAY CONTROL-DIVERSION STRUC			686,392	200,097	164,421	0	1,050,909	

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	1.00	EA	115,631	0	0	0	115,631	115631.00

	TOTAL	1.00	115,631	0	0	0	115,631	115631.00

	TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	115,631	0	0	0	115,631	115631.00

31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	1.00	EA	62,550	0	0	0	62,550	62550.00

	TOTAL	1.00	62,550	0	0	0	62,550	62550.00

	TOTAL CONSTRUCTION MANAGEMENT	1.00	62,550	0	0	0	62,550	62550.00

	TOTAL Tunnel Shaft #5 Project Cost	1.00	904,295	200,097	164,421	0	1,268,812	12688

OVERHEAD							102,688	

SUBTOTAL							1,371,500	
PROFIT							85,210	

SUBTOTAL							1,456,710	
BOND							12,646	

TOTAL INCL INDIRECTS							1,469,356	
CONTING							279,802	

TOTAL INCL OWNER COSTS							1,749,158	

ATTACHMENT M-CACES

DA - 35

VENT SHAFT #6

Thu 10 Aug 1995

U.S. Army Corps of Engineers

TIME 11:53:49

Eff. Date 06/09/95

PROJECT SHFT06: Tunnel Shaft #6 Project Cost - Passaic River

FINAL ESTIMATE

TITLE PAGE 1

Tunnel Shaft #6 Project Cost
Passaic River
Flood Damage Reduction Project
Main Tunnel
Vent Shaft #6

Designed By: Nashville District
Estimated By: Nashville District

Prepared By: Carroll Overstreet, CEORN-EP-C
H.F. (Bud) Kiefer, CENAN-PR-TC

Preparation Date: 06/09/95
Effective Date of Pricing: 06/09/95
Est Construction Time: 189 Days

Sales Tax: 0.00%

This report is not copyrighted, but the information
contained herein is For Official Use Only.

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-1994
by Building Systems Design, Inc.
Release 5.30

Thu 10 Aug 1995

U.S. Army Corps of Engineers

TIME 11:53:49

Eff. Date 06/09/95

PROJECT SHFT06: Tunnel Shaft #6 Project Cost - Passaic River

TABLE OF CONTENTS

FINAL ESTIMATE

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - ELEMENT.....	1
PROJECT INDIRECT SUMMARY - ELEMENT.....	3
PROJECT DIRECT SUMMARY - ELEMENT.....	5

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

-
1. Quantity change probable due to incomplete data.
 2. Method of work may differ from that estimated.
 3. Actual time of contract is not firm and will affect quantities.
 4. Quantities will be determined by actual conditions during contract.
 5. Actual production rates may differ from those estimated.
 6. Mode of transportation may vary between contractors.
 7. Project scope not highly defined.

** PROJECT OWNER SUMMARY - ELEMENT **

		QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00	EA	3,606	541	4,147	4146.90	
	TOTAL General Design Memorandum	1.00	EA	3,606	541	4,147	4146.90	
	TOTAL LANDS AND DAMAGES	1.00	EA	3,606	541	4,147	4146.90	

15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work			71,583	20,000	91,583		
	TOTAL Mob, Demob & Preparatory Work			71,583	20,000	91,583		
15.10	Earthwork for Structures							
15.10.02	Site Work			975,595	200,000	1,175,595		
	TOTAL Earthwork for Structures			975,595	200,000	1,175,595		
15.12	Seepage Control							
15.12.02	Site Work			149,457	35,000	184,457		
	TOTAL Seepage Control			149,457	35,000	184,457		
15.25	Embedded Metal Work							
15.25.05	Metals			18,556	3,000	21,556		
	TOTAL Embedded Metal Work			18,556	3,000	21,556		
15.99	Associated General Items							
15.99.01	Concrete above ground			11,982	2,000	13,982		
15.99.02	Site Work			8,558	1,500	10,058		
15.99.03	Concrete below ground			159,912	35,000	194,912		
	TOTAL Associated General Items			180,453	38,500	218,953		
	TOTAL FLOODWAY CONTROL-DIVERSION STRUC			1,395,644	296,500	1,692,144		

** PROJECT OWNER SUMMARY - ELEMENT **

	QUANTITY	UOM	CONTRACT	CONTING	TOTAL COST	UNIT COST	NOTES

30	PLANNING, ENGINEERING AND DESIGN						
30.20	General Design Memorandum						
30.20.08	Final Report Documentation	1.00	EA	131,032	18,912	149,944	149944.00
TOTAL General Design Memorandum		1.00	EA	131,032	18,912	149,944	149944.00
TOTAL PLANNING, ENGINEERING AND DESIGN		1.00	EA	131,032	18,912	149,944	149944.00
31	CONSTRUCTION MANAGEMENT						
31.23	Construction Contracts						
31.23.11	Supervision and Administration	1.00	EA	69,800	17,450	87,250	87250.00
TOTAL Construction Contracts		1.00	EA	69,800	17,450	87,250	87250.00
TOTAL CONSTRUCTION MANAGEMENT		1.00	EA	69,800	17,450	87,250	87250.00
TOTAL Tunnel Shaft #6 Project Cost		1.00	EA	1,600,082	333,403	1,933,485	1933485 1,2,3

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST	UNIT COST

01 LANDS AND DAMAGES							
01.20 General Design Memorandum							
01.20.03 Real Estate Analysis Documents	1.00 EA	3,606	0	0	0	3,606	3606.00
TOTAL General Design Memorandum	1.00 EA	3,606	0	0	0	3,606	3606.00
TOTAL LANDS AND DAMAGES	1.00 EA	3,606	0	0	0	3,606	3606.00

15 FLOODWAY CONTROL-DIVERSION STRUC							
15.01 Mob, Demob & Preparatory Work		60,000	6,000	4,950	633	71,583	
TOTAL Mob, Demob & Preparatory Work		60,000	6,000	4,950	633	71,583	

15.10 Earthwork for Structures							
15.10.02 Site Work		817,728	81,773	67,463	8,632	975,595	
TOTAL Earthwork for Structures		817,728	81,773	67,463	8,632	975,595	

15.12 Seepage Control							
15.12.02 Site Work		126,453	11,381	9,648	1,975	149,457	
TOTAL Seepage Control		126,453	11,381	9,648	1,975	149,457	

15.25 Embedded Metal Work							
15.25.05 Metals		15,675	1,411	1,196	274	18,556	
TOTAL Embedded Metal Work		15,675	1,411	1,196	274	18,556	

15.99 Associated General Items							
15.99.01 Concrete above ground		10,142	913	774	153	11,982	
15.99.02 Site Work		7,229	651	552	126	8,558	
15.99.03 Concrete below ground		135,358	12,182	10,328	2,044	159,912	
TOTAL Associated General Items		152,730	13,746	11,653	2,323	180,453	
TOTAL FLOODWAY CONTROL-DIVERSION STRUC		1,172,586	114,310	94,910	13,838	1,395,644	

FINAL ESTIMATE

** PROJECT INDIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	DIRECT	OVERHEAD	PROFIT	BOND	TOTAL COST UNIT COST

30 PLANNING, ENGINEERING AND DESIGN							
30.20 General Design Memorandum							
30.20.08	Final Report Documentation	1.00 EA	131,032	0	0	0	131,032 131032.00

	TOTAL General Design Memorandum	1.00 EA	131,032	0	0	0	131,032 131032.00

	TOTAL PLANNING, ENGINEERING AND DESIGN	1.00 EA	131,032	0	0	0	131,032 131032.00
31 CONSTRUCTION MANAGEMENT							
31.23 Construction Contracts							
31.23.11	Supervision and Administration	1.00 EA	69,800	0	0	0	69,800 69800.00

	TOTAL Construction Contracts	1.00 EA	69,800	0	0	0	69,800 69800.00

	TOTAL CONSTRUCTION MANAGEMENT	1.00 EA	69,800	0	0	0	69,800 69800.00

	TOTAL Tunnel Shaft #6 Project Cost	1.00 EA	1,377,024	114,310	94,910	13,838	1,600,082 1600082
CONTING							
							333,403

	TOTAL INCL OWNER COSTS						1,933,485

FINAL ESTIMATE

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

01	LANDS AND DAMAGES							
01.20	General Design Memorandum							
01.20.03	Real Estate Analysis Documents	1.00 EA	3,606	0	0	0	3,606	3606.00
	TOTAL General Design Memorandum	1.00 EA	3,606	0	0	0	3,606	3606.00
	TOTAL LANDS AND DAMAGES	1.00 EA	3,606	0	0	0	3,606	3606.00

15	FLOODWAY CONTROL-DIVERSION STRUC							
15.01	Mob, Demob & Preparatory Work							
	TOTAL Mob, Demob & Preparatory Work		30,000	30,000	0	0	60,000	

15.10	Earthwork for Structures							
15.10.02	Site Work							
	TOTAL Earthwork for Structures		621,580	170,125	26,024	0	817,728	

15.12	Seepage Control							
15.12.02	Site Work							
	TOTAL Seepage Control		0	0	126,453	0	126,453	

15.25	Embedded Metal Work							
15.25.05	Metals							
	TOTAL Embedded Metal Work		2,850	2,850	9,975	0	15,675	

15.99	Associated General Items							
15.99.01	Concrete above ground							
15.99.02	Site Work							
15.99.03	Concrete below ground							
	TOTAL Associated General Items		110,053	16,712	25,965	0	152,730	

	TOTAL FLOODWAY CONTROL-DIVERSION STRUC		764,483	219,687	188,417	0	1,172,586	

Thu 10 Aug 1995

U.S. Army Corps of Engineers

TIME 11:53:49

Eff. Date 06/09/95

PROJECT SHFT06: Tunnel Shaft #6 Project Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 6

** PROJECT DIRECT SUMMARY - ELEMENT **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

30	PLANNING, ENGINEERING AND DESIGN							
30.20	General Design Memorandum							
30.20.08	1.00	EA	131,032	0	0	0	131,032	131032.00

	TOTAL	1.00	131,032	0	0	0	131,032	131032.00

	TOTAL PLANNING, ENGINEERING AND DESIGN	1.00	131,032	0	0	0	131,032	131032.00

31	CONSTRUCTION MANAGEMENT							
31.23	Construction Contracts							
31.23.11	1.00	EA	69,800	0	0	0	69,800	69800.00

	TOTAL Construction Contracts	1.00	69,800	0	0	0	69,800	69800.00

	TOTAL CONSTRUCTION MANAGEMENT	1.00	69,800	0	0	0	69,800	69800.00

	TOTAL Tunnel Shaft #6 Project Cost	1.00	968,921	219,687	188,417	0	1,377,024	137702

OVERHEAD							114,310	

SUBTOTAL							1,491,334	
PROFIT							94,910	

SUBTOTAL							1,586,244	
BOND							13,838	

TOTAL INCL INDIRECTS							1,600,082	
CONTING							333,403	

TOTAL INCL OWNER COSTS							1,933,485	

ATTACHMENT M-CACES

DA - 36

POMPTON INLET BYPASS CHANNEL

Thu 10 Aug 1995

U.S. Army Corps of Engineers

TIME 12:14:36

PROJECT POMIBY: Pump Inlet Bypass Ch Proj Cost - Passaic River

FINAL ESTIMATE

TITLE PAGE 1

Pump Inlet Bypass Ch Proj Cost
Passaic River
Flood Damage Reduction Project
Pompton Inlet
Bypass Channel

Designed By: Tech Eng Br, CENAN-PR-T
Estimated By: Associated Cost Engineers, Inc.

Prepared By: Bill Porter-Carlton, ACE
H.F. (Bud) Kiefer, CENAN-PR-TC

Date: 06/27/95
Est Construction Time: 420 Days

MCACES GOLD EDITION
Composer GOLD Copyright (C) 1985, 1988, 1990, 1992
by Building Systems Design, Inc.
Release 5.20J

Thu 10 Aug 1995

U.S. Army Corps of Engineers

TIME 12:14:36

PROJECT POMIBY: Pump Inlet Bypass Ch Proj Cost - Passaic River

TABLE OF CONTENTS

FINAL ESTIMATE

CONTENTS PAGE 1

SUMMARY REPORTS	SUMMARY PAGE
PROJECT OWNER SUMMARY - LEVEL 3.....	1
PROJECT INDIRECT SUMMARY - LEVEL 3.....	2
PROJECT DIRECT SUMMARY - LEVEL 3.....	3

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

PEQUANNICK RIVER CHANNEL MODIFICATIONS

NOTES, QUALIFICATIONS AND ASSUMPTIONS

SCOPE OF WORK:

The Pequannock River (Bypass Channel) is part of the Passaic River Flood Damage Reduction Project. The total improvement length is 1,830 linear feet at a depth of cut from 0 to 7 feet. The bottom width varies from 50 feet to 74 feet. A total of 415,383 cubic yards will be removed from the river. A temporary easement 20' wide times the 1,830 linear footage of the improvement (36,600 square feet or 0.84 acres) needs to be cleared on one side of the river for equipment access. The equipment consists of the crane with dragline equipment and the trucks used to remove the spoils. After the dredging is completed, the area will be graded and seeded.

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL	CST	UNIT

01 LANDS AND DAMAGES								
01_20 General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	20,598	3,090	23,688	23688	
	General Design Memorandum	1.00	EA	20,598	3,090	23,688	23688	
	LANDS AND DAMAGES	1.00	EA	20,598	3,090	23,688	23688	
09 CHANNELS AND CANALS								
09_01 Channels								
09_01.01	Mob, Demob & Preparatory Work	1830.00	LF	4,249	838	5,087	2.78	
09_01.13	Traffic Control	1830.00	LF	103,848	20,491	124,339	67.94	
09_01.15	Mechanical Dredging	415382.54	LF	3,717,049	733,425	4,450,474	10.71	
09_01.AA	Bank Stabilize, Dikes & Jetties	1830.00	LF	609,417	120,246	729,663	398.72	
	Channels	1.00	EA	4,434,562	875,000	5,309,562	5309562	
	CHANNELS AND CANALS	1.00	EA	4,434,562	875,000	5,309,562	5309562	
30 PLANNING, ENGINEERING AND DESIGN								
30_20 General Design Memorandum								
30_20.08	Final Reort Documentation	1.00	EA	542,463	55,315	597,778	597778	
	General Design Memorandum	1.00	EA	542,463	55,315	597,778	597778	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	542,463	55,315	597,778	597778	
31 CONSTRUCTION MANAGEMENT								
31_23 Construction Contracts								
31_23.11	Supervision and Administration	1.00	EA	332,592	49,889	382,481	382481	
	Construction Contracts	1.00	EA	332,592	49,889	382,481	382481	
	CONSTRUCTION MANAGEMENT	1.00	EA	332,592	49,889	382,481	382481	
	Pump Inlet Bypass Ch Proj Cost	1.00	EA	5,330,215	983,294	6,313,509	6313509	

	QUANTITY	UOM	DIRECT	FIELD	O	OVERHEA	PROFIT	BOND	INS/PE	TOTAL	CST	UNIT

01 LANDS AND DAMAGES												
01_20 General Design Memorandum												
01_20.03	Real Estate Analysis Documents	1.00	EA	20,598	0	0	0	0	0	20,598	20598	
	General Design Memorandum	1.00	EA	20,598	0	0	0	0	0	20,598	20598	
	LANDS AND DAMAGES	1.00	EA	20,598	0	0	0	0	0	20,598	20598	
09 CHANNELS AND CANALS												
09_01 Channels												
09_01.01	Mob, Demob & Preparatory Work	1830.00	LF	3,542	213	150	282	20	42	4,249	2.32	
09_01.13	Traffic Control	1830.00	LF	86,569	5,194	3,671	6,895	491	1,028	103,848	56.75	
09_01.15	Mechanical Dredging	415382.54	LF	3,098,581	185,915	131,380	246,797	17,573	36,802	3,717,049	8.95	
09_01.AA	Bank Stabilize, Dikes & Jetties	1830.00	LF	508,018	30,481	21,540	40,463	2,881	6,034	609,417	333.01	
	Channels	1.00	EA	3,696,710	221,803	156,741	294,437	20,966	43,907	4,434,562	443456	
	CHANNELS AND CANALS	1.00	EA	3,696,710	221,803	156,741	294,437	20,966	43,907	4,434,562	4434562	
30 PLANNING, ENGINEERING AND DESIGN												
30_20 General Design Memorandum												
30_20.08	Final Reort Documentation	1.00	EA	542,463	0	0	0	0	0	542,463	542463	
	General Design Memorandum	1.00	EA	542,463	0	0	0	0	0	542,463	542463	
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	542,463	0	0	0	0	0	542,463	542463	
31 CONSTRUCTION MANAGEMENT												
31_23 Construction Contracts												
31_23.11	Supervision and Administration	1.00	EA	332,592	0	0	0	0	0	332,592	332592	
	Construction Contracts	1.00	EA	332,592	0	0	0	0	0	332,592	332592	
	CONSTRUCTION MANAGEMENT	1.00	EA	332,592	0	0	0	0	0	332,592	332592	
	Pomp Inlet Bypass Ch Proj Cost Contingency	1.00	EA	4,592,363	221,803	156,741	294,437	20,966	43,907	5,330,215	53302983,294	
	TOTAL INCL OWNER COSTS									6,313,509		

		QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT

01	LANDS AND DAMAGES								
01_20	General Design Memorandum								
01_20.03	Real Estate Analysis Documents	1.00	EA	20,598	0	0	20,598		20598
	General Design Memorandum	1.00	EA	20,598	0	0	20,598		20598
	LANDS AND DAMAGES	1.00	EA	20,598	0	0	20,598		20598
09	CHANNELS AND CANALS								
09_01	Channels								
09_01.01	Mob, Demob & Preparatory Work	1830.00	LF	2,479	1,063	0	3,542		1.94
09_01.13	Traffic Control	1830.00	LF	83,011	3,558	0	86,569		47.31
09_01.15	Mechanical Dredging	415382.54	LF	471,008	1381425	1,246,148	3,098,581		7.46
09_01.AA	Bank Stabilize, Dikes & Jetties	1830.00	LF	88,403	18,639	400,976	508,018		277.61
	Channels	1.00	EA	644,901	1404685	1,647,123	3,696,710		3696710
	CHANNELS AND CANALS	1.00	EA	644,901	1404685	1,647,123	3,696,710		3696710
30	PLANNING, ENGINEERING AND DESIGN								
30_20	General Design Memorandum								
30_20.08	Final Reort Documentation	1.00	EA	542,463	0	0	542,463		542463
	General Design Memorandum	1.00	EA	542,463	0	0	542,463		542463
	PLANNING, ENGINEERING AND DESIGN	1.00	EA	542,463	0	0	542,463		542463
31	CONSTRUCTION MANAGEMENT								
31_23	Construction Contracts								
31_23.11	Supervision and Administration	1.00	EA	332,592	0	0	332,592		332592
	Construction Contracts	1.00	EA	332,592	0	0	332,592		332592
	CONSTRUCTION MANAGEMENT	1.00	EA	332,592	0	0	332,592		332592
	Pomp Inlet Bypass Ch Proj Cost	1.00	EA	1,540,554	1404685	1,647,123	4,592,363		4592363
	Prime Contractor's Field Overhead						221,803		
	SUBTOTAL						4,814,166		

Thu 10 Aug 1995

U.S. Army Corps of Engineers

TIME 12:14:36

PROJECT POMIBY: Pomp Inlet Bypass Ch Proj Cost - Passaic River

FINAL ESTIMATE

SUMMARY PAGE 4

** PROJECT DIRECT SUMMARY - LEVEL 3 **

	QUANTITY	UOM	LABOR	EQUIPMN	MATERIAL	TOTAL	CST	UNIT
Prime's Home Office Expense						156,741		

SUBTOTAL						4,970,906		
Prime Contractor's Profit						294,437		

SUBTOTAL						5,265,343		
Prime Contractor's Bond						20,966		

SUBTOTAL						5,286,309		
Insurance and Permits						43,907		

TOTAL INCL INDIRECTS						5,330,215		
Contingency						983,294		

TOTAL INCL OWNER COSTS						6,313,509		