HOUSATONIC RIVER FLOOD CONTROL

THOMASTON
DAM AND RESERVOIR

NAUGATUCK RIVER, CONNECTICUT

COST ANALYSIS

U.S. Army Engineer Division, New England
Corps of Engineers Waltham, Mass.

MARCH 1961

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM 54, MASS.

ADDRESS REPLY TO:
DIVISION ENGINEER

REFER TO FILE NO.
NEDGW

1 March 1961

SUBJECT: Preliminary Cost Analysis, Thomaston Dam

TO: Chief of Engineers
Department of the Army
Washington 25, D. C.
ATTN: ENGCW-E

1. In accordance with your request of 27 May 1960 for cost analysis of the major features of the Thomaston Dam, there are forwarded herewith 100 copies of this preliminary cost analysis.

2. The estimated cost of preparing this preliminary analysis is $3,000. The final analysis would cost $2,500 additional.

SEYMOUR A. POTTER, JR.
Brigadier General, USA
Division Engineer

Incl (100 cys)
Cost Analysis
Thomaston Dam

THOMASTON DAM PROJECT
NAUGATUCK RIVER
CONNECTICUT

COST ANALYSIS REPORT

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS

March 1961

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1. Authority for report. This report has been prepared in compliance with letter from OCE (ENGCW-E) to Division Engineer, U.S. Army Engineer Division, New England dated 27 May 1960, requesting that a cost analysis be prepared on each major feature of the Thomaston Dam and Reservoir.

2. Scope. This report includes a cost analysis of the major features of the project together with detailed pertinent data; detailed cost analysis; information on individual contracts; and key drawings.

3. Description of project. The Thomaston dam is a project to be operated solely for flood control, as authorized for construction by the 1944 Flood Control Act.

The dam is located on the Naugatuck River about 1.6 miles upstream of Thomaston, Connecticut, and about 30.4 miles above the confluence of the Naugatuck and Housatonic rivers at Derby, Connecticut. It forms a part of the flood control program for the Housatonic River Basin and will be a contributing factor in the prevention of future catastrophies such as occured in previous floods.

The reservoir will provide a total storage capacity of 42,000 acre-feet, equivalent to 8.1 inches of run-off over the 97 square-mile tributary drainage area. The dam, with a length of 2,000 feet and a height of 142 feet above streambed, has been constructed of rolled-earth and roll-fill with an overflow side channel-type spillway located in rock on the left bank. Top elevation of the dam is 517.0 feet above mean sea level and the top width is 24 feet accommodating a paved road. The spillway crest is at elevation 494.0 and is 23.0 feet below the top of the dam which provides for 18.0 feet of spillway surcharge and 5.0 feet of freeboard.

The outlet works, which are founded on rock on the right bank of the river, consist of an intake structure provided with stoplogs; a gate structure with two 5'-8" x 10'-0" hydraulically operated slide gates; and a 10-foot horseshoe-shaped concrete conduit.

The alignment of the dam is curved to position the dam along the most favorable foundation conditions and also to accommodate the relocated railroad which crosses on the downstream face of the dam on a 25.5 foot wide berm of varying elevation. The type and design of the embankment with its large homogenous rock section was influenced by the proximity of the exceedingly heavy rock cut for that portion of the railroad relocation which lies adjacent to the dam site, and the use of the dam for the relocated railroad's stream crossing.

The relocated railroad is owned by the New York, New Haven and Hartford Railroad (Devon to Winsted Branch) and now runs along the Naugatuck River above the reservoir area. The relocated distance was 6.89 miles.

The highways relocated consisted of 5.84 miles of State Route No. 8 and 4.4 miles of town secondary roads. As the State of Connecticut desired to convert Route No. 8 into a modern limited access road, the proportion of cost paid under this project was measured by the estimated cost of relocating Route No. 8 in its original condition.

4. Construction program. The preparation for contract drawings was begun in 1955 and construction contracts were awarded as follows:

Railroad relocation . . . . . August 1957
Dam and reservoir . . . . . April 1958
Highway relocations . . . . . December 1958
Recreation area . . . . . April 1960

At the time of this report (1 September 1960) the dam and reservoir are 94% completed and the relocations and other items are 97% completed.

5. Cost data. The cost analysis presented in this report includes actual direct costs up to 30 June 1960 together with the estimated costs to complete the work. The distributive costs are based on actual expenditures to 30 August 1960 plus estimated costs to finish the project. It is therefore the opinion of this District that the total representative direct cost will be $12,080,740.23 and the distributive cost $1,649,000.00 making a total of $13,729,740.23.

6. Cost Summary. The table on Page 4 summarizes the direct and distributive costs for the entire project. Section B of the appendix includes tables covering detailed cost analysis and Section C lists detailed information on the separate contracts.

7. Distributive cost. The distributive cost as included under each account is based on the following:

Table 2. Distributive Cost

Account	Distributive Item	Total Cost
30	Engineering & Design	$ 864,000
31	Supervision & Administration	785,000
	Total Distributive Cost	$1,649,000

TABLE 1. SUMMARY OF ESTIMATE OF COST

Account Number	Feature, Sub-Feature	Type Cost	Cost Analysis Unit	Quantity	Unit Cost	Totals	Total Cost
01	Lands and Damages	Direct	Acre	1,255.00	1,386.45	1,740,000.00	
		Distributive	L.S.	--	--	30,000.00	
		Total	Acre	1,255.00	1,410.36		1,770,000.00
02.1	Relocations, Roads	Direct	L.S.	--	--	2,954,426.09	
		Distributive	L.S.	--	--	462,560.27	
		Total	L.S.	--	--		3,416,986.36
02.2	Relocations, Railroads	Direct	Mi.	6.89	511,520.50	3,524,376.22	
		Distributive	L.S.	--	--	551,794.67	
		Total	Mi.	6.89	591,606.82		4,076,170.89
02.3	Relocations, Public Utilities	Direct	L.S.	--	--	53,327.64	
		Distributive	L.S.	--	--	8,349.24	
		Total	L.S.	--	--		61,676.88
03	Reservoir & Pool Preparation	Direct	Acre	60.00	510.00	36,600.00	
		Distributive	L.S.	--	--	5,730.30	
		Total	Acre	60.00	705.51		42,330.30
04.1	Dam, Non-overflow Section	Direct	Cu. yd. fill	1,408,800.00	1.33	1,869,518.19	
		Distributive	L.S.	--	--	292,701.49	
		Total	Cu. yd. fill	1,408,800.00	1.53		2,162,219.68
04.2	Dam, Overflow Section	Direct	Cu. yd. concrete	12,383.80	78.85	976,462.08	
		Distributive	L.S.	--	--	152,879.98	
		Total	Cu. yd. concrete	12,383.80	91.20		1,129,342.06
04.3	Dam, Outlet Works	Direct	Sq. ft. opening	113.40	5,807.35	658,553.64	
		Distributive	L.S.	--	--	103,106.58	
		Total	Sq. ft. opening	113.40	6,716.58		761,660.22
08	Roads and Bridges	Direct	L.S.	--	--	136,997.50	
		Distributive	L.S.	--	--	21,449.02	
		Total	L.S.	--	--		158,446.52
14	Recreation Facilities	Direct	L.S.	--	--	27,300.00	
		Distributive	L.S.	--	--	4,274.23	
		Total	L.S.	--	--		31,574.23
19	Buildings, Grounds & Utilities	Direct	Sq. ft.	2,268.00	38.44	87,178.87	
		Distributive	L.S.	--	--	13,649.20	
		Total	Sq. ft.	2,268.00	44.46		100,828.07
20	Permanent Operating Equipment	Direct	L.S.	--	--	16,000.00	
		Distributive	L.S.	--	--	2,505.02	
		Total	L.S.	--	--		18,505.02
					TOTAL		13,729,740.23

These costs were pro-rated to all features of the work except to lands and damages which includes an extra overhead charge not included in the acquisitions cost. The distributive costs are described in more detail in the following paragraphs.

8. Engineering and design cost. The following is a breakdown of engineering and design costs and include actual costs to 30 August 1960 plus estimated costs to complete the project.

Table 3. Engineering & Design Cost

Item No.	Item	Cost
30.	Engineering & design before 30 June 1954. . . .	$ 44,042
30.1	General investigations, etc.	10,250
30.2	Surveying	29,228
30.3	Sub-surface studies	153,100
30.4	Preliminary field rec., taking lines, gross appraisals, etc.	42,530
30.5	Climatic, hydrologic and meteologic	33,600
30.6	Preliminary & detailed designs, plans & drafting	440,100
30.7	All reproduction	26,000
30.8	Preparation of specifications, estimates of cost, etc.	14,450
30.9	Consulting service, models & service by other agencies	7,000
30.10	Engineering after award, including change orders	63,700
	Total Cost of Engineering & Design	$864,000

9. Supervision and Administration Cost. The following is a breakdown of the cost of supervision and administration and includes actual costs to 30 August 1960 plus estimated costs to complete the project.

Table 4. Supervision and Administration

Item No.	Item	Cost
31.	Supervision & administration before 30 June 1954	$ 1,000
	Project Office	
31.11	Supervision	37,000
31.12	Administration	13,000
31.13	Office engineering & drafting	11,200
31.14	Layouts	35,000
31.15	Inspection	96,000
31.16	Transportation	13,000
31.17	Office services	10,000
	Area Office	
31.21	Inspection	5,000
31.22	Other	40,000
31.23	Overhead	110,000
	Division Office	
31.31	Inspection & supervision	22,000
31.33	Special studies & reports	2,800
31.341	Division overhead-contract work	332,000
31.342	Division overhead-hired labor work	50,000
31.4	District office expense billed by other Districts	2,000
	Total Cost of Supervision & Administration	$785,000

10. Summary of project costs. The following table summarizes project costs:

Table 5. Summary of Project Costs

Item	Distributive Cost	Direct Cost	Percent of Land & Damage Cost
Land and damages			
Land and damage cost		$1,603,800.00	
Acquisition cost		136,200.00	8.49
Overhead	$ 30,000.00		1.87
Total Land & damages	30,000.00	1,740,000.00	10.36
			Percent of Construction Cost
Dam and reservoir			
Construction Cost		10,340,740.23	
Engineering & design	834,000.00		8.066
Supervision & administration	785,000.00		7.591
Total, dam & reservoir	1,619,000.00	10,340,740.23	15.657
Totals	1,649,000.00	12,080,740.23	13.650
Total Project Cost	$13,729,740.23		

THOMASTON DAM PROJECT
NAUGATUCK RIVER
CONNECTICUT

SECTION A

PERTINENT DATA

PERTINENT DATA

Location of dam

On Naugatuck River, about 30.4 miles above its confluence with the Housatonic River at Derby, Connecticut, 1.6 miles above the Town of Thomaston, Connecticut, and 20.7 air miles west of Hartford.

Drainage area, square miles

Naugatuck River at Thomaston Dam site	97
Naugatuck River at Derby, Connecticut	312

Major floods near dam site in period 1927-1957, cfs

November 1927	10,000 (est)
March 1936	6,590
September 1938	9,970
December 1948	10,200
August 1955	41,600
October 1955	8,800

Elevations, ft. above mean sea level

Top of dam	517
Base of dam streambed at centerline	375
Spillway crest	494
Maximum surcharge elevation (design flood)	512
Sill of outlet gates	380
Minimum elevation to which land has been purchased or flowage easements acquired	499
Reservoir clearing limit, below	400

Reservoir

State Affected	Connecticut
Surface area:	
Total area at el. 512 (design flood)	1290 ac.
Area at el. 494 (spillway crest)	950 ac.
Area at el. 395 (winter pool elev.)	40 ac.
Storage:	
Total volume at el. 512	61,500 ac.-ft.
Volume at el. 494	42,000 ac.-ft.
Volume at el. 395	500 ac.-ft.

Dam

Type	Rolled-earth and rock fill with ungated side channel spillway and gated outlet works. Railroad crossing on downstream face.
Foundation, dam	Mostly stratified sands and gravels overlaying rock.
Foundation, spillway & outlet works	Degmatite and mica schist
Length	2,000 ft.
Maximum height	142 ft.
Width at top	24 ft.
Maximum width at base	546 ft.
Spillway	
Type	Concrete, side channel
Length	450 ft.
Crest elevation above msl	494.0
Height, downstream face	15.72 ft.
Maximum elevation, approach channel	485.0
Width, discharge channel	60 ft.
Outlet Works	
Elevation intake invert & gate sill	380.0
Width, approach channel	250.0 ft.
Gate sizes	2-5.67x10.0 ft.
Width, discharge channel	8.25 to 50.0 ft.

THOMASTON DAM PROJECT
NAUGATUCK RIVER
CONNECTICUT

SECTION B

DETAILED COST ANALYSIS

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1. The cost analysis tables have been set up to show the relationship of the cost of each feature, sub-feature or component to some quantitative unit which may be determined from a preliminary design.

2. The tables have been set up by features and sub-features as shown on Chart of Permanent Features and Sub-features for Construction, General, Projects, Part II, Chapter 208 of the Programming and Accounting Manual, revised 1 January 1956.

3. As far as possible, the minor components are the same as contract bid items, but where one contract bid item is applied to more than one feature, sub-feature or component, every effort has been made to distribute the bid item in the correct amounts.

4. At the time of making this report, the work had not been completed. This cost analysis, however, includes necessary amounts that have been estimated to complete the project.

TABLE B-1. COST ANALYSIS

LANDS AND DAMAGES (Acct. No. 01)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Land Costs	--	--	Approx. 10% residential and industrial;	Acre	--	(1,255.00)	(1,277.93)		1,603,800.00
Fee-Simple	--	--	22% agricultural; and 68% woodland	--	Acre	825.00	1,454.55	1,200,000.00	
Easements	--	--	--	--	Acre	430.00	837.21	360,000.00	
Resettlement Reimbursements	--	--	--	--	L.S.	--	--	30,000.00	
Damage Claims Payments	--	--	--	--	L.S.	--	--	300.00	
Future Claims	--	--	--	--	L.S.	--	--	21,000.00	
Disposal Receipts Reimbursements (Credit)	--	--	--	--	--	--	cr.	7,500.00	
Acquisition Costs	--	--	--	Tracts	--	(190.00)	(716.84)	--	136,200.00
Mapping and Surveying	--	--	--	--	--	--	--	22,000.00	
Appraising	--	--	--	--	--	--	--	36,000.00	
Title Evidence & Tract Ownership Data	--	--	--	--	--	--	--	16,000.00	
Negotiating and Closing	--	--	--	--	--	--	--	42,000.00	
Condemnation	--	--	--	--	--	--	--	7,700.00	
Investigation & Review Resettlement Applications	--	--	--	--	--	--	--	6,000.00	
Investigation & Review of Damage Claims	--	--	--	--	--	--	--	500.00	
Advance Planning	--	--	--	--	--	--	--	3,000.00	
Disposal Activities	--	--	--	--	--	--	--	3,000.00	
Total Direct Cost				Acre	--	(1,255.00)	(1,386.45)		$1,740,000.00
DISTRIBUTIVE COST									
Engineering & Design (Acct. No. 30)	--	--	--	--	% direct cost	1.73	--	30,000.00	
Total Distributive Cost									30,000.00
TOTAL COST (Direct & Distributive) OF LANDS AND DAMAGES				Acre	--	(1,255.00)	(1,410.36)		$1,770,000.00

TABLE B-2. COST ANALYSIS OF

RELOCATIONS, ROADS (Acct. No. 02.1)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Primary Highways Relocated	--	--	--	L.S.	--	--	--	--	1,430,638.19
Conn. Route No. 8	60-314	--	Route No. 8 that traversed the dam and reservoir area was a road with a 24 ft. pavement and the State of Connecticut had planned to convert this road into a limited-access dual highway. The length of this relocated highway affected by the construction of the dam is 5.66 miles. The total cost of this length was estimated to be $6,828,450. The amount chargeable to the Thomaston project after negotiation was agreed to be $1,420,000, which was the amount of the difference in cost of the highway with the reservoir project and the cost of the highway without the reservoir project, plus $10,658.19, which was paid the dam contractor for a detour during dam construction.	--	L.S.	--	--	1,420,000.00	
Detour on Conn. Route No. 8	58-551	--	0.11 mi. 2½"x24' bituminous concrete over gravel base.	L.S.	--	--	--	10,638.19	
Secondary Highways Relocated	--	--	--	Mi.	--	(4.40)	(346,315.00)	--	1,523,787.90
Relocation "C"	59-106	HC-1-1459	0.61 mi. 12"x20' and 3' shoulders with penetrated double bituminous surface. Single 26' span railroad overpass on concrete abutments and steel superstructure and concrete deck. Single 127' span bridge with concrete abutments and plate girder superstructure over Naugatuck River.	--	Mi.	.61	653,490.00	398,628.74	
Relocations "A", "B", & "D"	59-107	HC-1-1400	3.79 mi. 12"x20' and 3' shoulders with penetrated double bituminous surface. Single 26' skew span railroad overpass on concrete abutments and steel superstructure and concrete deck. 3-span 205' bridge with concrete piers and plate girder superstructure over Naugatuck River. 5-span 345' bridge with concrete piers and plate girder superstructure over Lead Mine Brook.	--	Mi.	3.79	286,849.00	1,087,159.16	
Land Costs	--	--	--	--	Acre	45.22	7,850.51	35,500.00	
Acquisition Costs	--	--	--	--	Tracts	19.00	131.57	2,500.00	
Total Direct Cost				L.S.	--	--	--	--	2,954,426.09
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	238,279.97	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	224,280.30	
Total Distributive Cost					% Direct Cost	15.657	--	--	462,560.27
TOTAL COST (Direct & Distributive) OF RELOCATIONS, ROADS				L.S.	--	--	--	--	3,416,986.36

TABLE B-3. COST ANALYSIS OF

RELOCATIONS, RAILROADS (Acct. No. 02.2)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Relocation, Railroad	--	--	--	Mi.	--	(6.89)	(511,520.50)	--	3,524,376.22
Excavation, Embankment, Drainage, etc. (Sta. 243+50 to 314+00)	58-551	HC-1-1200	The relocation of 6.89 miles of single track of the Devon-Winsted freight branch of the New York, New Haven and Hartford Railroad around Thomaston Reservoir in rugged, semi-mountainous terrain replaces 6.95 miles of track location that followed the bank of Naugatuck River. The new track crosses the river valley about mid-height on the downstream face of the dam. The track attains an elevation above design flood surcharge on an ascending gradient northerly of 1.2%. In the vicinity of the dam deep rock cuts were necessary, a large part of the excavation from which was used to form the embankment of the dam. The relocated line has no crossings at grade but passes over 2 waterways and one road and under 3 highways. The latter 3 bridges are included in highway relocations. The bridges charged to railroad relocations are: 100' Span, plate girder with ballasted deck over spillway of dam 18' Span, I beam over Railroad St. Annex 39' Skew span, I beam and ballasted deck over Spruce Brook	--	L.S.	--	--	1,407,564.11	
Excavation, Embankment, Drainage, etc. (Sta. 14+50 to 243+50 & 314+00 to 360+31)	58-158	HC-1-1070		--	L.S.	--	--	588,812.11	
Relocation, including bridges but excluding excavation, embankment, drainage, etc. as performed on other contracts	58-77	--		--	L.S.	--	--	1,370,000.00	
Land Costs	--	--	--	--	Acres	70.68	2,101.00	148,500.00	
Acquisition Costs	--	--	--	--	Tract	24.00	396.00	9,500.00	
Total Direct Cost				Mi.	--	(6.89)	(511,520.50)		3,524,376.22
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	284,247.53	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	267,547.14	
Total Distributive Cost					% Direct Cost	15.657	--		551,794.67
TOTAL COST (Direct & Distributive) OF RELOCATIONS, RAILROADS				Mi.	--	(6.89)	(591,606.82)		4,076,170.89

TABLE B-4. COST ANALYSIS OF

RELOCATIONS, PUBLIC UTILITIES (Acct. No. 02.3)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Relocations, Public Utilities	--	--	--	L.S.	--	--	--		53,327.64
Telephone relocations	60-283	--	--	--	L.S.	--	--	24,607.00	
Misc. telephone relocations	--	--	--	--	L.S.	--	--	2,100.00	
Electric relocations	60-315-402	--	--	--	L.S.	--	--	21,873.00	
Misc. electric relocations	--	--	--	--	L.S.	--	--	4,747.64	
Total Direct Cost				L.S.	--	--	--		53,327.64
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	4,300.96	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	4,048.28	
Total Distributive Cost					% Direct Cost	15.657	--		8,349.24
TOTAL COST (Direct & Distributive) OF RELOCATIONS, PUBLIC UTILITIES				L.S.	--	--	--		61,676.88

TABLE B-5. COST ANALYSIS OF

RESERVOIR & POOL PREPARATION (Acct. No. 03.0)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Clearing	58-551	HC-1-1200	Approx. 48 acres woodland and 12 acres open		Acre	60	510.00	30,600.00	
Log Boom	58-551	*			L.S.	--	--	6,000.00	
Total Direct Cost				Acre	--	(60)	(610.00)		36,600.00
DISTRIBUTIVE COST									
Engineering & Design (Acct. No. 30)					% Direct Cost	8.066		2,951.86	
Supervision & Administration (Acct. No. 31)					% Direct Cost	7.591		2,778.44	
Total Distributive Cost					% Direct Cost	15.657			5,730.30
TOTAL COST (Direct & Distributive) OF RESERVOIR & POOL PREPARATION				Acre		(60)	(705.51)		42,330.30

TABLE B-6. COST ANALYSIS OF

DAM, NON-OVERFLOW SECTION (Acct. No. 04.1)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Control & Diversion of River	58-551	HC-1-1202	--	L.S.	L.S.	--	--	2,500.00	2,500.00
Foundation	--	--	--	Cu. yd. excavation	--	(86,152.00)	(1.05)		90,493.00
Common excavation	58-551	--	--	--	Cu. yd.	85,952.00	.75	64,464.00	
Rock excavation, drainage outfall	58-551	--	--	--	Cu. yd.	200.00	8.00	1,600.00	
Preparation of Site	58-551	--	--	--	L.S.	--	--	24,429.00	
Borrow	--	HC-2-1011	--	Cu. yd. excavation	--	(1,015,674.00)	(1.19)		1,204,038.19
Common excavation, random borrow	58-551	--	--	--	Cu. yd.	140,000.00	.47	65,800.00	
Common excavation, pervious borrow	58-551	--	--	--	Cu. yd.	261,300.00	.55	143,196.00	
Common excavation, impervious borrow	58-551	--	--	--	Cu. yd.	317,700.00	1.10	349,470.00	
Rock excavation, borrow	58-551	--	--	--	Cu. yd.	296,674.00	2.09	619,906.44	
Safety mesh	58-551	--	--	--	Sq. yd.	15,555.00	1.65	25,665.75	
Dam Section	--	HC-1-1204	--	Cu. yd. fill	--	(1,408,800.00)	(.41)		572,487.00
Earth and rockfill	--	--	--	Cu. yd. fill	--	(1,408,800.00)	(.29)	(408,420.00)	
Select pervious fill	58-551	--	--	--	Cu. yd.	1,000.00	2.00	2,000.00	
Spread and roll earth fill	58-551	--	--	--	Cu. yd.	706,400.00	.18	127,152.00	
Spread and grade rock fill	58-551	--	--	--	Cu. yd.	688,600.00	.38	261,668.00	
Additional rolling for compaction	58-551	--	--	--	Hr.	100.00	16.00	1,600.00	
Compacted backfill	58-551	--	--	--	Cu. yd.	12,800.00	1.25	16,000.00	
Concrete, retaining walls	--	--	--	Cu. yd. concrete	--	(4,570.00)	(32.50)	(148,525.00)	
Aggregate, forms, mixing & placing	58-551	--	--	--	Cu. yd.	4,570.00	25.00	114,250.00	
Cement	58-551	--	1.50 bbl. per cu. yd. concrete	--	Bbl.	6,855.00	5.00	34,275.00	
Concrete, misc.	--	--	--	Cu. yd. concrete	--	(34.00)	(65.50)	(2,227.00)	
Aggregate, forms, mixing & placing	58-551	--	--	--	Cu. yd.	34.00	58.00	1,972.00	
Cement	58-551	--	1.50 bbl. per cu. yd. concrete	--	Bbl.	51.00	5.00	255.00	
Topsoiling	58-551	--	--	--	Sq. yd.	3,200.00	.25	800.00	
Seeding	58-551	--	--	--	Sq. yd.	3,200.00	.20	640.00	
Cable guard rail	58-551	--	--	--	Lin. ft.	3,800.00	2.75	10,450.00	
Guard posts	58-551	--	--	--	Ea.	10.00	14.50	145.00	
Misc. metals	58-551	--	--	--	Lb.	3,200.00	.40	1,280.00	
Total Direct Cost				Cu. yd. fill	--	(1,408,800.00)	(1.33)		1,869,518.19
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	150,780.14	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	141,921.35	
Total Distributive Cost					% Direct Cost	15.657	--		292,701.49
TOTAL COST (Direct & Distributive) OF DAM, NON-OVERFLOW SECTION				Cu. yd. fill	--	(1,408,800.00)	(1.53)		2,162,219.68

TABLE B-7. COST ANALYSIS OF

DAM, OVERFLOW SECTION (Acct. No. 04.2)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Foundation	--	HC-1-1230	--	Cu. yd. excavation	--	(238,560.00)	(2.09)		498,783.88
Preparation of site	58-551	--	--	--	L.S.	--	--	9,205.00	
Common Excavation	58-551	--	--	--	Cu. yd.	34,128.00	.75	25,596.00	
Rock Excavation	58-551	--	--	--	Cu. yd.	204,432.00	2.11	432,298.18	
Line Drilling	58-551	--	--	--	Sq. ft.	2,214.00	3.00	6,642.00	
Safety Mesh	58-551	--	--	--	Sq. yd.	10,720.00	1.65	17,688.00	
Mob. & Demob. for Drilling & Grouting	58-551	--	--	--	L.S.	--	--	1,500.00	
Drilling Grout Holes	58-551	--	--	--	Lin. ft.	2,000.00	1.00	2,000.00	
Drilling N.X. Exploratory Holes	58-551	--	--	--	Lin. ft.	187.70	5.50	1,032.35	
Portland Cement in Grout	58-551	--	--	--	Cu. ft.	581.00	1.60	929.60	
Placing Grout	58-551	--	--	--	Cu. ft.	581.00	2.75	1,597.75	
Connections to Grout Holes	58-551	--	--	--	Ea.	59.00	5.00	295.00	
Spillway Wier	--	HC-1-1230	--	Cu. yd. concrete	--	(5,792.40)	(32.50)		188,260.00
Aggregate, forms, mixing & placing	58-551	--	--	--	Cu. yd.	5,792.40	25.00	144,810.00	
Cement	58-551	--	--	--	Bbl.	8,690.00	5.00	43,450.00	
Spillway Lining	--	HC-1-1232	--	Cu. yd. concrete	--	(6,591.40)	(43.04)		283,673.20
Aggregate, forms, mixing & placing	58-551	--	--	--	Cu. yd.	6,591.40	24.63	162,348.70	
Cement	58-551	--	--	--	Bbl.	10,218.00	5.00	51,090.00	
Reinforcing	58-551	--	--	--	Lb.	159,600.00	.13	20,748.00	
Anchor Bars, 6' Setting	58-551	--	--	--	Ea.	362.00	14.00	5,068.00	
Anchor Bars, 10' Setting	58-551	--	--	--	Ea.	1,081.00	27.00	29,187.00	
Anchor Bars, 12' Setting	58-551	--	--	--	Ea.	222.00	25.00	5,550.00	
Drilling Drain Holes	58-551	--	--	--	Lin. ft.	5,520.00	1.60	8,832.00	
Cement Asbestos Pipe	58-551	--	--	--	Lin. ft.	1,699.00	.50	849.50	
Site Work	--	--	--	L.S.	--	--	--		5,745.00
Chain Link fencing	58-551	--	--	--	Lin. ft.	1,615.00	3.00	4,845.00	
Top soiling	58-551	--	--	--	Sq. yd.	2,000.00	.25	500.00	
Seeding	58-551	--	--	--	Sq. yd.	2,000.00	.20	400.00	
Total Direct Cost				Cu. yd. concrete	--	(12,383.80)	(78.85)		976,462.08
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	78,753.50	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	74,126.48	
Total Distributive Cost					% Direct Cost	15.657	--		152,879.98
TOTAL COST (Direct & Distributive) OF DAM, OVERFLOW SECTION				Cu. yd. concrete	--	(12,383.80)	(91.20)		1,129,342.06

TABLE B-8. COST ANALYSIS OF

DAM, OUTLET WORKS (Acct. No. 04.3)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Foundation	--	HC-1-1217	--	Cu. yd. excavation	--	(56,114.00)	(2.25)		126,158.88
Preparation of site	58-551	--	--	--	L.S.	--	--	1,734.00	
Common Excavation	58-551	--	--	--	Cu. yd.	6,320.00	.75	4,740.00	
Rock Excavation	58-551	--	--	--	Cu. yd.	49,794.00	2.27	113,032.38	
Line Drilling	58-551	--	--	--	Sq. ft.	200.00	3.00	600.00	
Rock Bolting	58-551	--	--	--	Ea.	6.00	16.00	96.00	
Safety Mesh	58-551	--	--	--	Sq. yd.	2,610.00	1.65	4,306.50	
Pumping for Conduit Outlet Structure	58-551	--	--	--	L.S.	--	--	1,650.00	
Outlet Works	--	--	--	Sq. ft. opening	--	(113.40)	(4,694.84)		532,394.76
Concrete, below El. 432.0	--	--	--	--	Cu. yd.	(4,793.00)	(35.97)	(172,423.00)	
Aggregate, forms, mixing & placing	58-551	--	--	--	Cu. yd.	4,793.00	25.00	119,825.00	
Cement	58-551	--	1.60 bbl. per cu. yd. conc.	--	Bbl.	7,670.00	5.00	38,350.00	
Reinforcing	58-551	--	22.87 lb. per cu. yd. conc.	--	Lb.	109,600.00	.13	14,248.00	
Concrete, above El. 432.0	--	--	--	--	Cu. yd.	(545.00)	(88.66)	(48,317.00)	
Aggregate, forms, mixing & placing	58-551	--	--	--	Cu. yd.	545.00	58.00	31,610.00	
Cement	58-551	--	1.65 bbl. per cu. yd. conc.	--	Bbl.	900.00	5.00	4,500.00	
Reinforcing	58-551	--	172.30 lb. per cu. yd. conc.	--	Lb.	93,900.00	.13	12,207.00	
Conduit and transition	--	--	--	--	Cu. yd.	(1,759.00)	(50.93)	(89,591.00)	
Aggregate, forms, mixing & placing	58-551	--	--	--	Cu. yd.	1,759.00	30.00	52,770.00	
Cement	58-551	--	1.68 bbl. per cu. yd. conc.	--	Bbl.	2,963.00	5.00	14,815.00	
Reinforcing	58-551	--	96.25 lb. per cu. yd. conc.	--	Lb.	169,300.00	.13	22,006.00	
Rubber Water Stops	58-551	--	--	--	Lin. ft.	800.00	3.50	2,800.00	
Hydraulic Gates, Hydraulic System & Accessories	58-551	--	--	--	L.S.	--	--	112,800.00	
Float Well & Accessories	58-551	--	--	--	L.S.	--	--	2,700.00	
Gate Vent System	58-551	--	--	--	L.S.	--	--	5,100.00	
Diesel-Electric Generator Set	58-551	--	--	--	L.S.	--	--	10,289.75	
Intake Tower-Misc. Work	58-551	--	--	--	L.S.	--	--	17,404.01	
Trolley Hoist 10-Ton	58-551	--	--	--	L.S.	--	--	17,250.00	
Tile Gauges	58-551	--	--	--	L.S.	--	--	2,500.00	
Aluminum Stairs & Platform	58-551	--	--	--	Lb.	9,000.00	3.83	34,500.00	
Misc. Metals	58-551	--	--	--	Lb.	28,800.00	.40	11,520.00	
Misc. Structural Steel	58-551	--	--	--	Lb.	13,000.00	.40	5,200.00	
Total Direct Cost				Sq. ft. opening	--	(113.40)	(5,807.35)		658,553.64
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	53,113.58	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	49,993.00	
Total Distributive Cost					% Direct Cost	15.657	--		103,106.58
TOTAL COST (Direct & Distributive) OF DAM, OUTLET WORKS				Sq. ft. opening	--	(113.40)	(6,716.58)		761,660.22

TABLE B-9. COST ANALYSIS OF

ROADS & BRIDGES (Acct. No. 08.0)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Access and Service Roads & Bridges	58-551	HC-1-1239	--	--	L.S.	--	--	136,997.50	
Total Direct Cost				L.S.	--	--			136,997.50
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	11,049.10	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	10,399.92	
Total Distributive Cost					% Direct Cost	15.657	--		21,449.02
TOTAL COST (Direct & Distributive) OF ROADS & BRIDGES				L.S.	--	--	--		158,446.52

TABLE B-10. COST ANALYSIS OF

RECREATION FACILITIES (Acct. No. 14.0)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Construction of Vista Area	60-92	HC-1-1364	Picnic and recreational area	--	L.S.	--	--	27,300.00	
Total Direct Cost				L.S.	--	--	--		27,300.00
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	2,201.80	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	2,072.43	
Total Distributive Cost					% Direct Cost	15.657	--		4,274.23
TOTAL COST (Direct & Distributive) OF RECREATION FACILITIES				L.S.	--	--	--		31,574.23

TABLE B-11. COST ANALYSIS OF

BUILDINGS, GROUNDS AND UTILITIES (Acct. No. 19.0)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Buildings	--	--	--	Sq. ft.	--	(2,268.00)	(16.61)		37,679.08
Utility Building	58-552	HC-1-1237	65' x 32'	--	Sq. ft.	2,080.00	14.80	30,794.08	
Comfort Station	58-551	--	15' x 12'-6"	--	Sq. ft.	188.00	28.01	5,265.00	
Top soiling & Seeding	58-552	--	--	--	Sq. yd.	3,600.00	.45	1,620.00	
Utilities	--	--	--	L.S.	--	--	--	--	49,499.79
Electric Light & Power	58-551	--	--	--	L.S.	--	--	33,250.00	
Water Distribution System	58-552	--	--	--	L.S.	--	--	9,300.00	
Drilled Well	58-551	--	--	--	L.S.	--	--	2,999.79	
Sewage Disposal System	58-551	--	--	--	L.S.	--	--	2,850.00	
Flag Pole	58-551	--	--	--	L.S.	--	--	1,100.00	
Total Direct Cost				Sq. ft.	--	(2,268.00)	(38.44)		87,178.87
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	7,031.14	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	6,618.06	
Total Distributive Cost					% Direct Cost	15.657	--		13,649.20
TOTAL COST (Direct & Distributive) OF BUILDINGS, GROUNDS AND UTILITIES				Sq. ft.	--	(2,268.00)	(44.46)		100,828.07

TABLE B-12. COST ANALYSIS OF

PERMANENT OPERATING EQUIPMENT (Acct. No. 20.0)

Feature, Sub-Feature and Components	Contract Reference	Drawing Reference	Description	Cost Analysis Unit	Unit of Quantity	Quantity	Unit Cost	Total Item Cost	Total Feature Cost
DIRECT COST									
Motor vehicles, boat, tractor, shop equipment, etc.	To be purchased	--	--	--	L.S.	--	--	16,000.00	
Total Direct Cost				L.S.	--	--	--		16,000.00
DISTRIBUTIVE COST									
Engineering & design (Acct. No. 30)	--	--	--	--	% Direct Cost	8.066	--	1,290.42	
Supervision & administration (Acct. No. 31)	--	--	--	--	% Direct Cost	7.591	--	1,214.60	
Total Distributive Cost					% Direct Cost	15.657	--		2,505.02
TOTAL COST (Direct & Distributive) OF PERMANENT OPERATING EQUIPMENT				L.S.	--	--	--		18,505.02

THOMASTON DAM PROJECT
NAUGATUCK RIVER
CONNECTICUT

SECTION C

INFORMATION ON EACH INDIVIDUAL CONTRACT

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CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Railroad Relocation

CONTRACTOR: New York, New Haven & Hartford R.R.

CONTRACT NO. DA-19-016 CIVENG-58-77

DATE OF AWARD: 2 Aug 57

DATE OF COMPLETION: Not Complete

SHEET 1 of 1

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Relocating about 6.9 miles of railroad line except cost of major excavation	L.S.	--	--	1,370,000.00
Total Estimated Contract Cost				$1,370,000.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Railroad Relocation

CONTRACTOR: Frank J. Shields, Inc. | CONTRACT NO. DA-19-016 CIVENG-58-158

DATE OF AWARD: 21 Oct 57 | DATE OF COMPLETION: 11 Aug 58 | SHEET 1 of 2

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Clearing and grubbing	LS	--	--	49,365.47
Common excavation, general				
a. First 60,000 cy	CY	0.50	60,000	30,000.00
b. Over 60,000 cy	CY	0.40	50,177	20,070.80
Rock excavation, general				
a. First 90,000 cy	CY	2.95	90,000	265,500.00
b. Over 90,000 cy	CY	2.50	27,449	68,622.50
Borrow excavation				
a. First 20,000 cy	CY	0.50	20,000	10,000.00
b. Over 20,000 cy	CY	0.30	43,797	13,139.10
Trench, culvert & bridge excav.-earth	CY	2.50	2,041	5,102.50
Trench, culvert & bridge excav.-rock	CY	8.00	1,035.5	8,284.00
Dumped rock channel lining	CY	6.00	9	54.00
Grouted riprap	SY	5.00	176	880.00
Concrete	CY	55.00	985.5	54,202.50
Steel, reinforcement	LB	0.17	113,415	19,280.55
Rubber water stopes	LF	3.00	511	1,533.00
Pipe, BCCMP-30"	LF	14.00	40	560.00
Pipe, RCP-12"	LF	3.50	52	182.00
Pipe, RCP-24"	LF	6.60	472	3,115.20
Pipe, RCP-30"	LF	10.00	36	360.00
Pipe, RCP-36"	LF	12.60	369	4,649.40
Pipe, RCP-42"	LF	16.00	36	576.00
Pipe, RCP-48"	LF	20.00	98	1,960.00
Pipe, RCP-54"	LF	25.00	36	900.00
Pipe, RCP-66"	LF	40.00	327.5	13,100.00
Pipe, extra heavy, RCP-66"	LF	45.00	168	7,560.00
Portland cement	Bbl	6.00	1,440.6	8,643.60
Total Basic Contract				587,640.62
<u>Modification #1</u>				
Install culvert and head walls				
Increase following items:				
Trench, culvert & bridge, excav.-earth	CY	2.50	20	50.00*
Steel, reinforcement	LB	0.17	100	17.00*
Pipe, RCP-24"	LF	6.60	26	171.60*
Portland cement	Bbl	6.00	6	36.00*
Add following items:				
Culvert rock excavation, Sta. 75+75	CY	18.51	17	314.67
Concrete for head wall, Sta. 75+75	CY	94.70	4	378.80

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Railroad Relocation

CONTRACTOR: Frank J. Shields, Inc. | CONTRACT NO. DA-19-016 CIVENG-58-158

DATE OF AWARD: 21 Oct 57 | DATE OF COMPLETION: 11 Aug 58 | SHEET 2 of 2

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Modification #2				
Realign, relocate and lengthen culvert at Sta. 111+00				
Increase following items:				
Clearing and grubbing	LS	--	--	85.40*
Trench, culvert & bridge excav.-earth	CY	2.50	100	250.00*
Concrete	CY	55.00	56	3,080.00*
Steel, reinforcement	LB	0.17	8,200	1,394.00*
Rubber water stops	LF	3.00	111	333.00*
Portland cement	Bbl	6.00	84	504.00*
Modification #3				
Relocate culvert from Sta. 318+80 to 317+83.75				
Increase following items:				
Clearing and grubbing	LS	--	--	98.87*
Trench, culvert & bridge excav.-earth	CY	2.50	300	750.00*
Trench, culvert & bridge excav.-rock	CY	8.00	650	5,200.00*
Concrete	CY	55.00	2	110.00*
Portland cement	Bbl	6.00	3	18.00*
Decrease following item:				
Steel reinforcement	LB	0.17	80	Cr. (13.60)*
Modification #4				
Remove trees and house foundations near Sta. 358+00				
Increase following item:				
Clearing and grubbing	LS	--	--	431.20*
Modification #5				
Install culvert and headwall at Sta. 131+70				
Increase following items:				
Steel, reinforcement	LB	0.17	100	17.00*
Pipe, RCD-24"	LF	6.60	28	184.84*
Portland cement	Bbl	6.00	6	36.00*
Add following items:				
Culvert earth excavation	CY	4.51	22	99.22
Concrete for endwall	CY	94.70	4	378.80
Total Added Modification Items				1,171.49
Total Estimated Contract Cost				588,812.11

* Amount already added to contract items

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Dam

CONTRACTOR: Oneglia & Gervasini, Inc. and Building Materials, Inc. | CONTRACT NO. DA-19-016 CIVENG-58-551

DATE OF AWARD: 28 Apr 58 | DATE OF COMPLETION: Not Complete | SHEET 1 of 7

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Control and diversion of river	LS	--	--	2,500.00
Preparation of site	LS	--	--	51,000.00
Reservoir clearing	LS	--	--	30,600.00
Common excavation, general				
a. First 126,400 cu. yd.	CY	0.75	126,400	94,800.00
b. Over 126,400 cu. yd.	CY	0	0	0
Common excavation, pervious, borrow area H				
a. First 156,300 cu. yd.	CY	0.42	156,300	65,646.00
b. Over 156,300 cu. yd.	CY	0.35	5,000	1,750.00
Common excavation, random, borrow area I				
a. First 190,000 cu. yd.	CY	0.47	140,000	65,800.00
b. Over 190,000 cu. yd.	CY	0	0	0
Common excavation, impervious, borrow area D				
a. First 257,700 cu. yd.	CY	1.10	257,700	283,470.00
b. Over 257,700 cu. yd.	CY	1.10	60,000	66,000.00
Rock excavation				
a. First 530,000 cu. yd.	CY	2.27	530,000	1,203,100.00
b. Over 530,000 cu. yd.	CY	1.93	404,100	779,913.00
Line drilling	SF	3.00	2,514	7,542.00
Impervious fill	CY	0.18	261,400	47,052.00
Random fill	CY	0.18	290,000	52,200.00
Select pervious fill	CY	0.18	155,000	27,900.00
Rock fill	CY	0.38	720,300	273,714.00
Sluiced rock fill, trestle area	CY	1.25	28,000	35,000.00
Add. rolling for compaction	HR	16.00	100	1,600.00
Reinforced concrete pipe, 12-inch	LF	4.00	50	200.00
Reinforced concrete pipe, 18-inch	LF	5.00	130	650.00
Reinforced concrete pipe, 30-inch	LF	7.50	110	825.00
Gravel	CY	0.90	8,500	7,650.00
Rock bolting	EA	16.00	6	96.00
Compacted backfill	CY	1.25	15,200	19,000.00
Concrete, outlet works, below elev. 432	CY	25.00	4,793	119,825.00
Concrete, outlet works, above elev. 432	CY	58.00	545	31,610.00
Concrete, conduit & transition	CY	30.00	1,759	52,770.00
Concrete, lining spillway				
a. First 3,300 cu. yd.	CY	28.75	3,300	94,875.00
b. Over 3,300 cu. yd.	CY	20.50	3,291.4	67,473.70
Concrete, spillway weirs & walls	CY	25.00	10,362.4	259,060.00
Concrete, bridge abutments	CY	27.25	1,350	36,787.50
Concrete, bridge superstructure	CY	53.00	140	7,420.00
Concrete, misc.	CY	58.00	100	5,800.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Dam

CONTRACTOR: Oneglia & Gervasini, Inc. and Building Materials, Inc. | CONTRACT NO. DA-19-016 CIVENG-58-551

DATE OF AWARD: 28 Apr 58 | DATE OF COMPLETION: Not Complete | SHEET 2 of 7

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Steel reinforcement	LB	0.13	570,000	74,100.00
Rubber waterstops	LF	3.50	800	2,800.00
Anchor bars, 6-ft. setting	EA	14.00	362	5,068.00
Anchor bars, 10-ft. setting	EA	27.00	1,081	29,187.00
Anchor bars, 12-ft. setting	EA	25.00	222	5,550.00
Mobilization & demob. for drill. and grout	LS	--	--	1,500.00
Cement asbestos pipe	LF	0.50	1,699	849.50
Drilling drain holes	LF	1.60	5,520	8,832.00
Drilling grout holes	LF	1.00	2,000	2,000.00
Drilling NX exploratory holes	LF	5.50	187.7	1,032.35
Portland cement in grout	CF	1.60	581	929.60
Placing grout	CF	2.75	581	1,597.75
Connection to grout holes	EA	5.00	59	295.00
Hydraulic gates & accessories	LS	--	--	112,800.00
Float well and accessories	LS	--	--	2,700.00
Gate vent system	LS	--	--	5,100.00
Diesel-electric generator set	LS	--	--	10,289.75
Intake tower, misc. work	LS	--	--	17,404.01
Trolley hoist, 10-ton	LS	--	--	17,250.00
Tile gauges	LS	--	--	2,500.00
Aluminum stairs & platforms	LB	3.75	9,200	34,500.00
Structural steel, access bridge	LS	--	--	20,600.00
Structural steel, service bridge	LS	--	--	19,700.00
Misc. metals	LB	0.40	32,000	12,800.00
Misc. structural steel	LB	0.40	13,000	5,200.00
Electric light & power	LS	--	--	33,250.00
Log boom	LS	--	--	6,000.00
Flag pole	LS	--	--	1,100.00
Cable guard rail	LF	2.75	3,800	10,450.00
Guard posts	EA	14.50	20	290.00
Chain link fencing	LF	3.00	1,615	4,845.00
Utility building	LS	--	--	30,794.08
Comfort station	LS	--	--	5,265.00
Bituminous concrete road surfacing	SY	2.50	7,200	18,000.00
Mobilization & demob. for well	LS	--	--	150.00
Driving 8" outer casing	LF	8.70	30.6	266.22
Drilling 8" hole below 8" casing	LF	6.50	10	65.00
Setting 6" liner casing	LF	7.70	39.6	304.92
Drilling 6" hole, uncased	LF	5.50	280.3	1,541.65
Test-pumping well	HR	12.00	56	672.00
Water distribution system	LS	--	--	9,300.00
Sewage disposal system	LS	--	--	2,850.00
Topsoiling	SY	0.25	8,800	2,200.00
Seeding	SY	0.20	8,800	1,760.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Dam

CONTRACTOR: Oneglia & Gervasini, Inc. and Building Materials, Inc. | CONTRACT NO. DA-19-016 CIVENG-58-551

DATE OF AWARD: 28 Apr 58 | DATE OF COMPLETION: Not Complete | SHEET 3 of 7

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Safety Mesh	SY	1.65	48,980	80,817.00
Portland cement	Bbl	5.00	39,700	198,500.00
Total Basic Contract				4,596,635.03
Modifications				
Modification #1				
Increase bottom width of cut-off trench and add 3' select filter.				
Increase following items:				
Common excavation, general	CY	0.75	6,400	4,800.00
Common excavation, pervious, borrow area H	CY	0.42	1,300	546.00
Common excavation, impervious, borrow area D	CY	1.10	7,700	8,470.00
Impervious fill	CY	0.18	6,400	1,152.00
Add following item:				
Select pervious fill filter	CY	2.00	1,000	2,000.00
Modification #2				
Revision of grades in building area.				
No contract change	--	--	--	--
Modification #3				
Revision to provide blockouts in concrete.				
No contract change	--	--	--	--
Modification #4				
Temporary detour road for Route No. 8				
Add following items:				
Clearing & grubbing for detour	LS	--	--	200.00
Common excavation for detour	CY	0.37½	56	21.00
Rock excavation for detour	CY	1.13½	2,204	2,501.54
Random borrow for detour	CY	0.23½	0	0
Random fill for detour	CY	0.09	13,503	1,215.27
Gravel fill for detour	CY	0.45	1,305	587.25
Bituminous concrete surfacing for detour	SY	1.25	3,359	4,198.75
42" ACCM pipe for detour	LF	11.00	60	660.00
Pipe backfill for detour	CY	0.75	46	34.50
Cable guard rail for detour	LF	0.87½	1,737	1,344.88
Anchors for guard rail	EA	25.00	10	250.00
Rock overhaul	CY	0.12½	0	0
Credit for salvage of pipe	LF	6.25	60	Cr. (375.00)

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK Construction of Dam

CONTRACTOR: Oneglia & Gervasini, Inc. and Building Materials, Inc. | CONTRACT NO. DA-19-016 CIVENG-58-551

DATE OF AWARD: 28 Apr 58 | DATE OF COMPLETION: Not Complete | SHEET 4 of 7

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Modification #5				
Furnish one additional oil pump starter for hoist motor				
Increase following item:				
Intake tower, misc. work	LS	--	--	627.00*
Modification #6				
Topsoil and seed borrow area J	LS	--	--	10,800.00
Modification #7				
Construct and place 3 concrete observation markers in rail. berm.	LS	--	--	480.00
Modification #8				
Additional stripping on top slopes of left bank of spillway and railroad cut	LS	--	--	2,398.90
Modification #9				
Additional conduit, wire and safety switch for future sump pump				
Increase following item:				
Intake tower, misc. work	LS	--	--	277.01*
Modification #10				
Revision in rock slopes of railroad cut.				
Increase following items:				
Preparation of site	LS	--	--	1,000.00*
Rock excavation, over 530,000 cu. yd.	CY	1.93	30,000	57,900.00*
Decrease following item:				
Safety Mesh	SY	1.65	10,000	Cr.(16,500.00)*
Add following items:				
Rock excavation, at or near top of completed railroad cuts	CY	5.25	2,200	11,550.00
Rock excavation to cleavage plane	CY	3.50	58,000	203,000.00
Modification #11				
Extra watering in rock fill in railroad portion of dam embankment	MG	5.00	8,800	44,000.00
Modification #12				
Clean up and repair railroad relocation work				
Add following items:				
Clean up & repair railroad right of way	LS	--	--	35,000.00
Grader and operator	HR	13.75	23	316.25

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Dam

CONTRACTOR: Oneglia & Gervasini, Inc. and Building Materials, Inc. | CONTRACT NO. DA-19-016 CIVENG-58-551

DATE OF AWARD: 28 Apr 58 | DATE OF COMPLETION: Not Complete | SHEET 5 of 7

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Modification #13				
Revision of conduit structure headwall and last monolith of conduit structure				
Increase following items:				
Common excavation, general, over 126,400 cy	CY	0.27	950	256.50*
Rock excavation, over 530,000 cy	CY	1.93	700	1,351.00*
Rock fill	CY	0.38	300	114.00*
Compacted backfill	CY	1.25	200	250.00*
Concrete, outlet works, below el. 432	CY	25.00	440	11,000.00*
Chain link fencing	LF	3.00	15	45.00*
Portland cement	Bbl	5.00	715	3,575.00*
Add following items:				
Pumping for conduit outlet struct.	LS	--	--	1,650.00
Decrease following items:				
Anchor bars 6-ft. setting	EA	14.00	30	Cr. (420.00)*
Drilling drain holes	LF	1.60	80	Cr. (128.00)*
Modification #14				
Revision of rock slopes at spill.				
Add following items:				
Additional rock excavation at spillway sta. 3+00 & 3+25	LS	--	--	1,750.00
Additional rock excavation at intersection, spillway and railroad cut.	LS	--	--	2,200.00
Modification #15				
Revision of sub-base for railroad bridge abutments				
Add following item:				
Removal of unsound rock and construction of sub-base for railroad bridge abutment	LS	--	--	5,264.77
Modification #16				
Changes in borrow items and extension of railroad drainage outfall				
Add following items:				
Common excavation, pervious, borrow area J	CY	0.65	100,000	65,000.00
Additional rock excavation railroad drainage outfall Sta. 5+60 to 6+56.8	CY	8.00	200	1,600.00
Modification #17				
Additional rock excavation to improve stability of slopes of railroad cut, RR sta. 274+50-288+00	LS	--	--	45,100.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Dam

CONTRACTOR: Oneglia & Gervasini, Inc. and Building Materials, Inc.

CONTRACT NO. DA-19-016 CIVENG-58-551

DATE OF AWARD: 28 Apr 58

DATE OF COMPLETION: Not Complete

SHEET 6 of 7

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Modification #18				
Remove unsound rock in rail. cut				
Add following items:				
Drilling by air track-reg. time	HR	51.91	773	40,126.43
Drilling by air track-overtime	HR	59.32	92	5,457.44
Load and blast-reg. time	HR	17.82	104	1,853.28
Load and blast-overtime	HR	22.82	37	844.34
Drilling by jumbo drill-reg. time	HR	49.96	110	5,495.60
Drilling by jumbo drill-overtime	HR	58.42	28	1,635.76
Scaling operations-reg. time	HR	45.15	546	24,651.90
Scaling operations-overtime	HR	53.69	42	2,254.98
Work by 1½ c.y. dragline-reg. time	HR	31.44	162	5,093.28
Work by 1½ c.y. dragline-overtime	HR	35.18	20	703.60
Jackhammer operations-reg. time	HR	13.05	245	3,197.25
Jackhammer operations-overtime	HR	15.36	32	491.52
Load and haul operations-reg. time	HR	114.35	187	21,383.45
Load and haul operations-overtime	HR	123.83	19	2,352.77
Work by 3/4 c.y. backhoe-reg. time	HR	57.68	271	15,631.28
Work by 3/4 c.y. backhoe-overtime	HR	64.41	29	1,867.89
Modification #19				
Revision of insulation on diesel exhaust piping				
Increase following item:				
Diesel-electric generator set	LS	--	--	189.75*
Modification #20				
Relocate piping in utility building				
Increase following item:				
Utility building	LS	--	--	194.08*
Modification #21				
Additional scaling operations in railroad cut				
Add following items:				
Drilling by air track-reg. time	HR	51.91	250	12,977.50**
Scaling operations-reg. time	HR	45.15	200	9,030.00**
Work by 1½ cy dragline-reg. time	HR	31.44	40	1,257.50**
Jackhammer operations-reg. time	HR	13.05	40	522.00**
Load and haul operations-reg. time	HR	114.35	60	6,861.00**
Work by 3/4 cy backhoe-reg. time	HR	57.68	60	3,460.80**
Modification #22				
Additional removal of unstable rock in railroad cut				
Add following items:				
Removal of additional rock sta. 311+25	LS	--	--	627.00
Removal of rock, clearing and removal of overburden sta. 310+00 to 311+00	LS	--	--	4,877.51

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Dam

CONTRACTOR: Oneglia & Gervasini, Inc. and Building Materials, Inc.

CONTRACT NO. DA-19-016 CIVENG-58-551

DATE OF AWARD: 28 Apr 58

DATE OF COMPLETION: Not Complete

SHEET 7 of 7

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Scaling sta. 15+00 to 243+00 with crane and clamshell	HR	24.82	88	2,184.16
Modification #				
Changes in access bridge fdn.	LS	--	--	3,400.00
Modification #				
Cut and ditch railroad cut	LS	--	--	12,000.00
Total Added Modification Items				598,877.55
Total Estimated Contract Cost				5,195.512.58

* Amounts already added to main contract items
** Amounts already added to Modification #18

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Road Relocation "C"

CONTRACTOR: A.E. Williams Const. Co., Inc. | CONTRACT NO. DA-19-016 CIVENG-59-106

DATE OF AWARD: 22 Dec 58 | DATE OF COMPLETION: 1 Dec 59 | SHEET 1 of 2

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Maintenance and protection of traffic	LS	--	--	3,360.00
Clearing and grubbing	AC	1,000.00	4	4,000.00
Earth excavation	CY	1.50	19,500	29,250.00
Rock excavation	CY	1.50	13,200	19,800.00
Structure excavation-earth	CY	2.00	2,700	5,400.00
Structure excavation-rock	CY	4.50	2,106	9,477.00
Trench excavation-0'-6' deep	CY	2.00	150	300.00
Rock in trench excav.-0'-6' deep	CY	9.00	200	1,800.00
Ditch excavation	CY	2.00	15	30.00
Borrow	CY	0.37	82,000	30,340.00
12" R.C. pipe	LF	3.50	42	147.00
18" R.C. pipe	LF	6.00	31	186.00
30" R.C. pipe	LF	11.00	59	649.00
21" R.C. pipe	LF	8.00	12	96.00
12" V.C. pipe	LF	4.00	40	160.00
Underdrain with 8" perf. ACCM pipe	LF	3.50	1,684	5,894.00
Outlets for underdrain with 18" R.C. pipe	LF	6.00	63	378.00
Manhole	EA	300.00	1	300.00
Cofferdam & pumping (east abut.)	LF	30.00	110	3,300.00
Cofferdam & pumping (west abut.)	LF	30.00	90	2,700.00
Concrete, class "A", wall bases	CY	30.00	894	26,820.00
Concrete, class "A", abut. bases	CY	30.00	1,079	32,370.00
Concrete, class "A", abut. stems	CY	39.00	1,190	46,410.00
Concrete, class "A", wall stems	CY	39.00	619	24,141.00
Concrete, class "A", approach slabs	CY	30.00	83	2,490.00
Concrete, class "A", bridge deck	CY	60.00	210	12,600.00
Concrete, class "A", steps & coping	CY	65.00	29	1,885.00
Concrete, class "C", end walls	CY	100.00	0.3	30.00
Joint filler, 1" cork	SF	1.25	1,732	2,165.00
Joint filler, ½" cork	SF	1.00	56	56.00
Joint filler, poured 1"x1½"	LF	1.00	250	250.00
Joint filler, white 3/4"x1"	LF	1.00	350	350.00
Joint filler, white, ½"x¼"	LF	0.75	100	75.00
Deformed steel bars	LB	0.11	336,143	36,975.73
Structural steel, stringers, etc.	LB	0.17	229,528	39,019.76
Structural steel, expansion dam	LB	0.40	6,300	2,520.00
Structural steel, bearing plates	EA	120.00	18	2,160.00
Membrane waterproofing	SY	2.50	176	440.00
Copper water stop	LF	1.50	40	60.00
Dampproofing, mopped	SY	1.25	1,033	1,291.25
Scuppers	EA	150.00	4	600.00
Metal bridge rail	LF	12.50	336	4,200.00
Pervious structural backfill	CY	1.00	5,000	5,000.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Road Relocation "C"

CONTRACTOR: A.E. Williams Const. Co., Inc. | CONTRACT NO. DA-19-016 CIVENG-59-106

DATE OF AWARD: 22 Dec 58 | DATE OF COMPLETION: 1 Dec 59 | SHEET 2 of 2

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Formation of subgrade	SY	0.20	7,180	1,436.00
Rolled bank gravel surface	CY	1.25	2,400	3,000.00
Bituminus prime coat	GAL	0.30	2,500	750.00
Bituminus material, 1st applic.	GAL	0.30	2,900	870.00
Bituminus material, 2nd applic.	GAL	0.30	1,800	540.00
Mineral aggregate, 1st applic.	T	4.00	150	600.00
Mineral aggregate, 2nd applic.	T	4.00	70	280.00
Calcium chloride for dust	T	75.00	0	0
Shaping and cleaning slopes	LF	1.00	3,040	3,040.00
Gravel shoulders	CY	1.50	1,100	1,650.00
Concrete curbing, cast-in-place	LF	3.50	80	280.00
Paved ditch	SY	4.00	650	2,600.00
Two-cable guard railing	LF	1.50	3,130	4,695.00
Type "A" anchorage	EA	30.00	2	60.00
Type "B" anchorage	EA	40.00	8	320.00
Compensating type anchorage	EA	35.00	14	490.00
Riprap	T	5.00	800	4,000.00
Furnishing and placing loam	SY	0.40	19,400	7,760.00
Seeding	AC	1,000.00	4	4,000.00
Boundary markers	EA	20.00	34	680.00
Total Basic Contract				396,526.74
Modification #1				
Add 7 ft. fence	LS	--	--	2,102.00
Total Modification Items				2,102.00
Total Estimated Contract Cost				398,628.74

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Road Relocations "A", "B", and "D"

CONTRACTOR: Oneglia & Gervasini, Inc. | CONTRACT NO. DA-19-016 CIVENG-59-107

DATE OF AWARD: 27 Mar 59 | DATE OF COMPLETION: Not Complete | SHEET 1 of 3

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Maintenance and protection of traffic	LS	--	--	1,500.00
Clearing and grubbing	AC	1,840.00	30	55,200.00
Earth excavation	CY	0.50	86,000	43,000.00
Channel earth excavation ("D" bridge)	CY	0.50	1,300	650.00
Channel earth excavation (box culvert)	CY	1.50	200	300.00
Rock excavation	CY	2.75	29,000	79,750.00
Channel rock excavation ("D" bridge)	CY	2.75	200	550.00
Loam excavation	CY	0.40	3,000	1,200.00
Structure excavation, earth	CY	2.75	3,500	9,625.00
Structure excavation, rock	CY	5.00	1,300	6,500.00
Removal of existing masonry	CY	20.00	5	100.00
Removal of existing masonry ("D" bridge)	LS	--	--	500.00
Trench excavation, 0'-6' deep	CY	2.00	600	1,200.00
Rock in trench excavation, 0'-6' deep	CY	7.00	1,000	7,000.00
Trench excavation, 0'-10' deep	CY	3.50	0	0
Ditch excavation	CY	2.00	170	340.00
Borrow	CY	0.41	237,500	97,375.00
12" R.C. pipe	LF	3.10	660	2,046.00
18" R.C. pipe	LF	4.25	1,000	4,250.00
24" R.C. pipe	LF	6.00	470	2,820.00
36" R.C. pipe	LF	13.00	237	3,081.00
48" R.C. pipe	LF	18.50	183	3,385.50
21" R.C. pipe	LF	6.50	10	65.00
Underdrain with 8" perf. ACCM pipe	LF	3.55	6,150	21,832.50
Outlets for underdrain-12" R.C. pipe	LF	3.55	580	2,059.00
Outlets for underdrain-18" R.C. pipe	LF	5.00	140	700.00
Manhole	EA	225.00	10	2,250.00
Cofferdam and pumping (East pier)	LF	50.00	110	5,500.00
Cofferdam and pumping (East abut.)	LF	32.00	115	3,680.00
Concrete, class "A"	CY	41.50	5,978	248,087.00
Concrete, class "C", endwalls	CY	100.00	0	0
Joint filler, 1" cork	SF	1.25	850	1,062.50
Joint filler, ½" cork	SF	1.00	100	100.00
Joint filler, poured 1"x½"	LF	1.00	340	340.00
Joint filler, white 3/4"x1"	LF	1.00	200	200.00
Joint filler, white ½"x¼"	LF	1.00	100	100.00
Deformed steel bars	LB	0.11	616,043	67,764.73

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Road Relocations "A", "B", and "D"

CONTRACTOR: Oneglia & Gervasini, Inc. | CONTRACT NO. DA-19-016 CIVENG-59-107

DATE OF AWARD: 27 Mar 59 | DATE OF COMPLETION: Not Complete | SHEET 2 of 3

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Structural steel, stringers, etc.	LB	0.17	778,300	132,311.00
Structural steel, expansion dam	LB	0.30	11,500	3,450.00
Bearing assemblies, long spans	EA	96.00	60	5,760.00
Bearing assemblies, short spans	EA	64.00	30	1,920.00
Membrane waterproofing	SY	2.75	250	687.50
Copper waterstops	LF	2.50	150	375.00
Rubber waterstops	LF	3.00	494	1,482.00
Dampproofing	SY	1.00	1,100	1,100.00
Scuppers	EA	90.00	12	1,080.00
Metal bridge rail	LF	14.00	1,200	16,800.00
Gravel fill under box culvert	CY	5.00	35	175.00
Pervious structure backfill	CY	1.35	2,800	3,780.00
Subbase	CY	1.35	1,400	1,890.00
Formation of subgrade	SY	0.20	45,000	9,000.00
Broken stone for base	T	3.50	420	1,470.00
Rolled gravel base	CY	3.00	300	900.00
Broken stone for bit. pavement	T	4.00	350	1,400.00
Rolled bank gravel surface	CY	1.50	14,500	21,750.00
Bituminus prime coat	GAL	0.25	14,600	3,650.00
Bituminus material, 1st applic.	GAL	0.25	16,700	4,170.00
Bituminus material, 2nd applic.	GAL	0.25	10,400	2,600.00
Bituminus material for shoulders	GAL	0.50	280	140.00
Bituminus material for macadam	GAL	0.14	7,000	980.00
Mineral aggregate, 1st applic.	T	4.50	840	3,780.00
Mineral aggregate, 2nd applic.	T	4.50	420	1,890.00
Calcium chloride	T	60.00	20	1,200.00
Shaping and cleaning slopes	LF	1.00	19,700	19,700.00
Gravel shoulders	CY	1.50	11,300	16,950.00
Concrete curbing, cast-in-place	LF	3.00	140	420.00
Bituminus concrete lip curbing	LF	0.50	850	425.00
Paved ditch	SY	3.50	4,250	14,875.00
Two-cable guard railing	LF	1.35	17,950	24,232.50
Type "A" anchorage	EA	30.00	30	900.00
Type "B" anchorage	EA	40.00	12	480.00
Compensating type anchorage	EA	35.00	100	3,500.00
Reset two-cable railing	LF	1.25	130	162.50
Riprap	T	2.00	15,000	30,000.00
Furnishing and placing loam	SY	0.40	60,000	24,000.00
Placing loam	SY	0.20	12,000	2,400.00
Seeding	AC	800.00	20	16,000.00
Boundary markers	EA	15.00	205	3,075.00
Joint filler, special	SF	1.00	1,000	1,000.00
Total Basic Contract				1,055,973.73

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Road Relocations "A", "B", and "D"

CONTRACTOR: Oneglia & Gervasini, Inc. | CONTRACT NO. DA-19-016 CIVENG-59-107

DATE OF AWARD: 27 Mar 59 | DATE OF COMPLETION: Not Complete | SHEET 3 of 3

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Modification #1				
Add 7 ft. fence	LS	--	--	2,035.43
Modifications (estimated add.)	LS	--	--	29,150.00
Total Modification Items				31,185.43
Total Estimated Contract Cost				1,087,159.16

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Construction of Vista Area

CONTRACTOR: Oneglia & Gervasini, Inc. | CONTRACT NO. DA-19-016 CIVENG-60-92

DATE OF AWARD: 25 Apr 60 | DATE OF COMPLETION: Not Complete | SHEET 1 of 1

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Construction of vista area	L.S.	--	--	27,300.00
Total Estimated Contract Cost				$27,300.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Telephone Relocations

CONTRACTOR: Southern New England Telephone Co.

CONTRACT NO. DA-19-016 CIVENG-60-283

DATE OF AWARD: 20 Oct 59

DATE OF COMPLETION: Not Complete

SHEET 1 of 1

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Relocation, rearrangement and alteration of telephone facilities	L.S.	--	--	24,607.00
Total Estimated Contract Cost				$24,607.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Road Relocation

CONTRACTOR: State of Connecticut | CONTRACT NO. DA-19-016 CIVENG-60-314

DATE OF AWARD: 30 Nov 59 | DATE OF COMPLETION: Not Complete | SHEET 1 of 1

DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
This contract covers the amount chargeable to the government on the Thomaston Dam. Route #8 that traversed the dam and reservoir area was a road with a 24 ft. pavement and the State of Connecticut had planned to convert this road into a limited access dual highway. The length of this relocated highway affected by the construction of the dam is 5.66 miles, the total cost of this length was estimated to be $6,828,450. The amount chargeable to the Thomaston project after negotiation was agreed to be $1,420,000, which was the amount of the difference in cost of the highway with the reservoir project and the cost of the highway without the reservoir project, plus $10,658.19 which was paid the dam contractor under contract DA-19-016-CIVENG-58-77 for a detour during dam construction.	L.S.	--	--	1,420,000.00
Total Estimated Contract Cost				$1,420,000.00

CONTRACT SUMMARY FOR THOMASTON DAM

FEATURE OF WORK: Utility Relocations

CONTRACTOR: The Connecticut Light & Power Co.

CONTRACT NO. DA-19-016 CIVENG-60-315

DATE OF AWARD: 20 March 59

DATE OF COMPLETION: Not Complete

SHEET 1 of 1

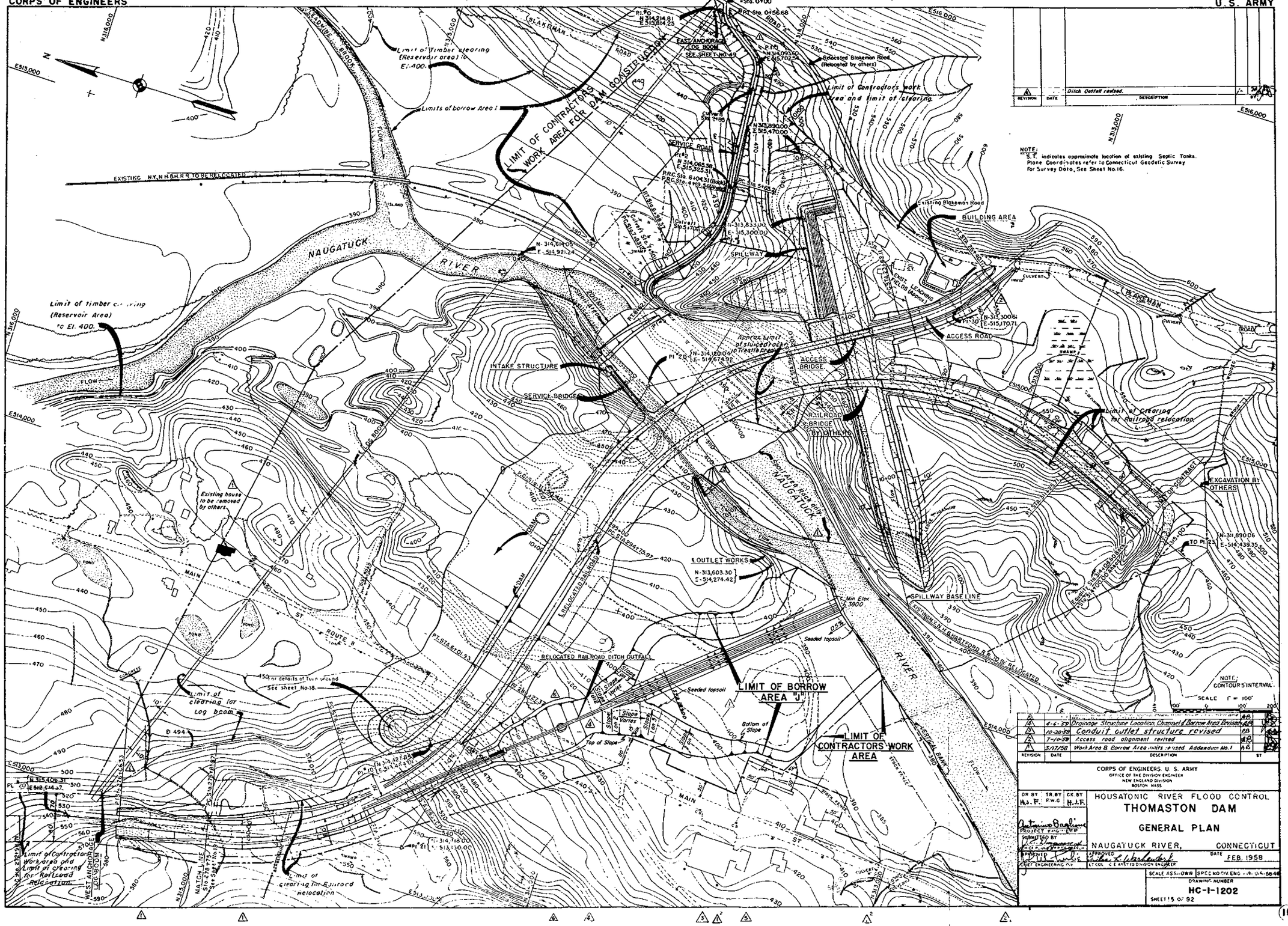
DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Relocation, rearrangement and alteration of facilities	L.S.	--	--	20,908.00
Total Estimated Contract Cost				$20,908.00

THOMASTON DAM PROJECT
NAUGATUCK RIVER
CONNECTICUT RIVER

PERTINENT DRAWINGS

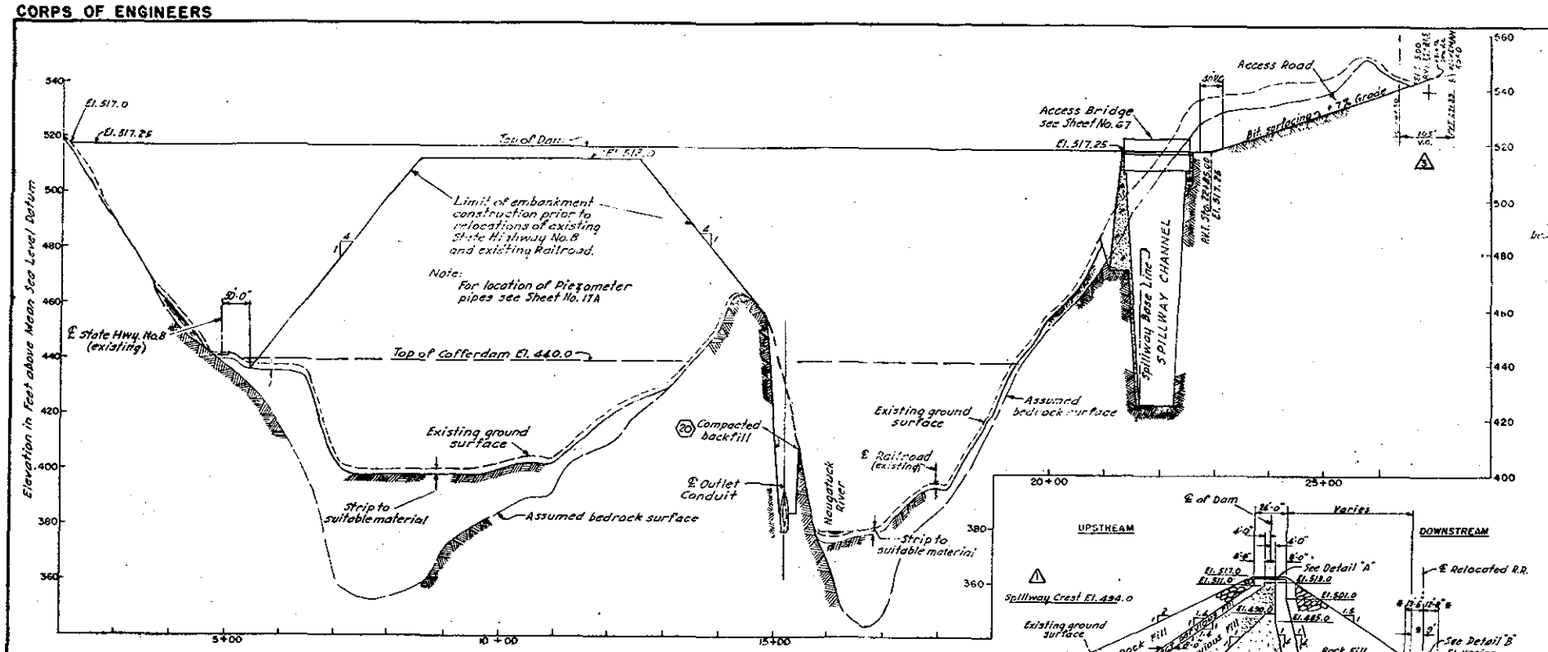
CORPS OF ENGINEERS

U.S. ARMY



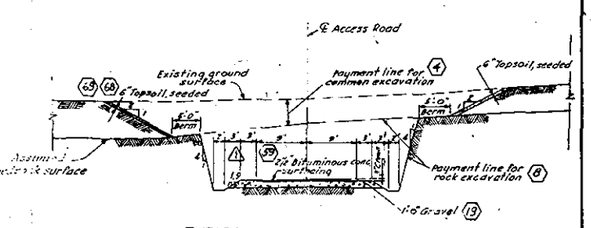
CORPS OF ENGINEERS

U.S. ARMY



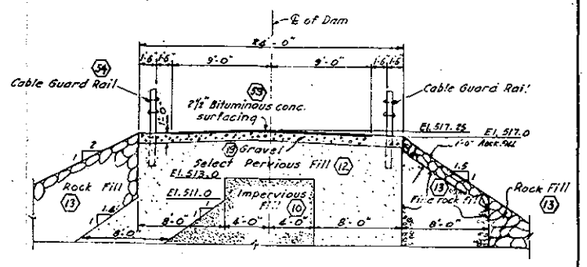
PROFILE ALONG ℄ OF DAM AND ACCESS ROAD

SCALE HOR. 1" = 100'
VERT. 1" = 20'



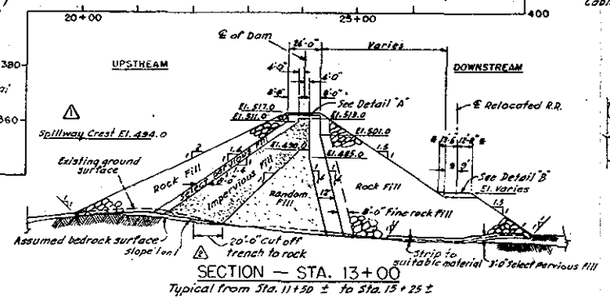
TYPICAL SECTION – ACCESS ROAD

SCALE 1" = 10'



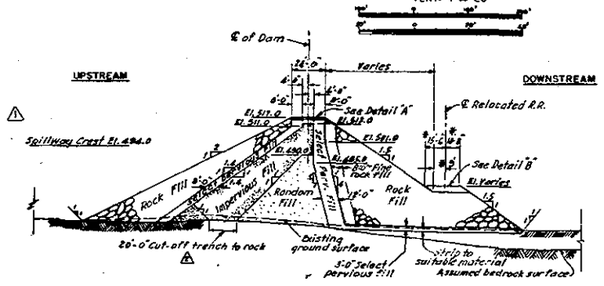
DETAIL "A"

SCALE 1" = 5'



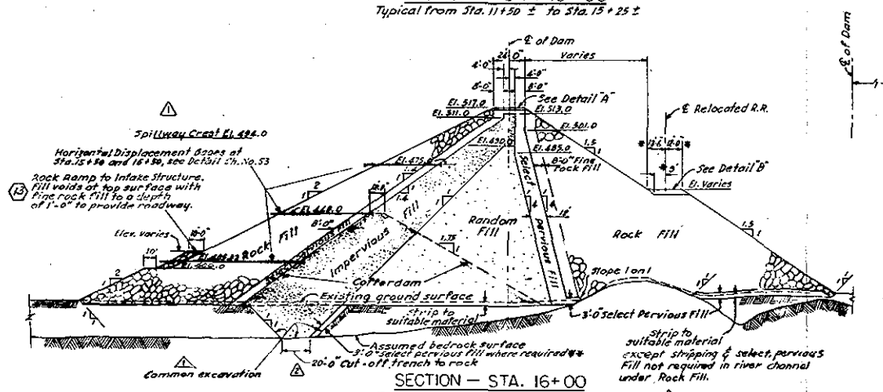
SECTION — STA. 13+00

Typical from Sta. 11+50 ± to Sta. 15+25 ±



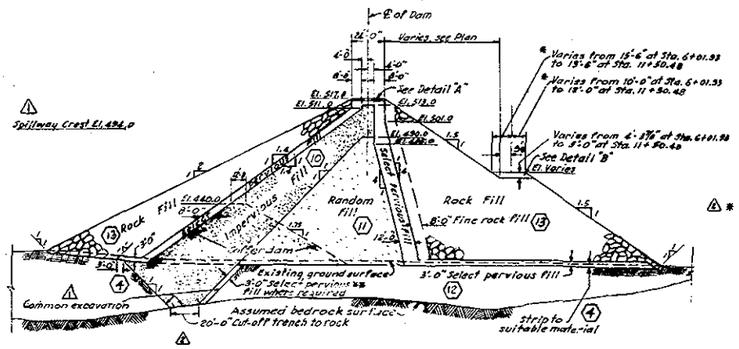
SECTION — STA. 5+00

Typical from Sta. 4+35 ± to Sta. 6+00 ±



SECTION — STA. 16+00

Typical from Sta. 15+25 ± to Sta. 17+00 ±



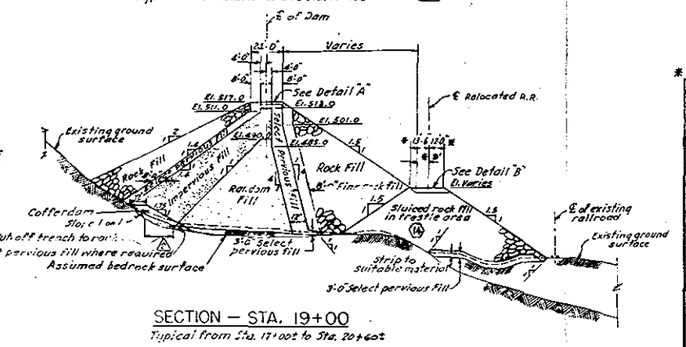
SECTION — STA. 9+00

Typical from Sta. 6+00 ± to Sta. 11+50 ±

EMBANKMENT SECTIONS

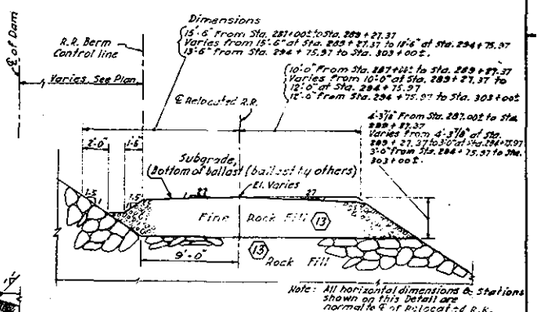
SCALE 1" = 40'

** Note: A 3'-0" Select pervious fill filter shall be placed on the downstream slope of the cut-off trench at locations to be determined in the field.



SECTION — STA. 19+00

Typical from Sta. 17+00 ± to Sta. 20+60 ±



DETAIL "E"

SCALE 1" = 5'

NOTES

Elevations refer to Mean Sea Level Datum.
Figures in Hexagons indicate item numbers under which payment will be made.
For Sections From West Abutment to Sta. 4+35.17 see Sheet No. 18
For Sections From Sta. 20+50 to Spillway see Sheet No. 43
For General Plan see Sheet No. 15
For Plan and Profile of relocated railroad see Sheet No. 19
For Details of Service Bridge Abutment see Sheet No. 53
* Indicates distances normal to ℄ Relocated Railroad.

REVISION	DATE	DESCRIPTION	BY
4	7-10-58	Access road - Vertical curve revised	RB
3	3/7/58	Note added. cut-off trench revised.	RB
2	3/17/58	Misc. revisions, Add. No. 1	RB

CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

DES. BY F.B.S. | DR. BY J.A.M. | CK. BY H.J.F.

PROJECT ENGINEER

SUBMITTED BY
CHIEF, ADM. & CONTS. BRANCH

APPROVED
CHIEF, ENGINEERING DIV.

APPROVED
LT. COL. C.E. ASST TO DIVISION ENGINEER

HOUSATONIC RIVER FLOOD CONTROL
THOMASTON DAM
EMBANKMENT
PROFILE & SECTIONS

NAUGATUCK RIVER — CONNECTICUT

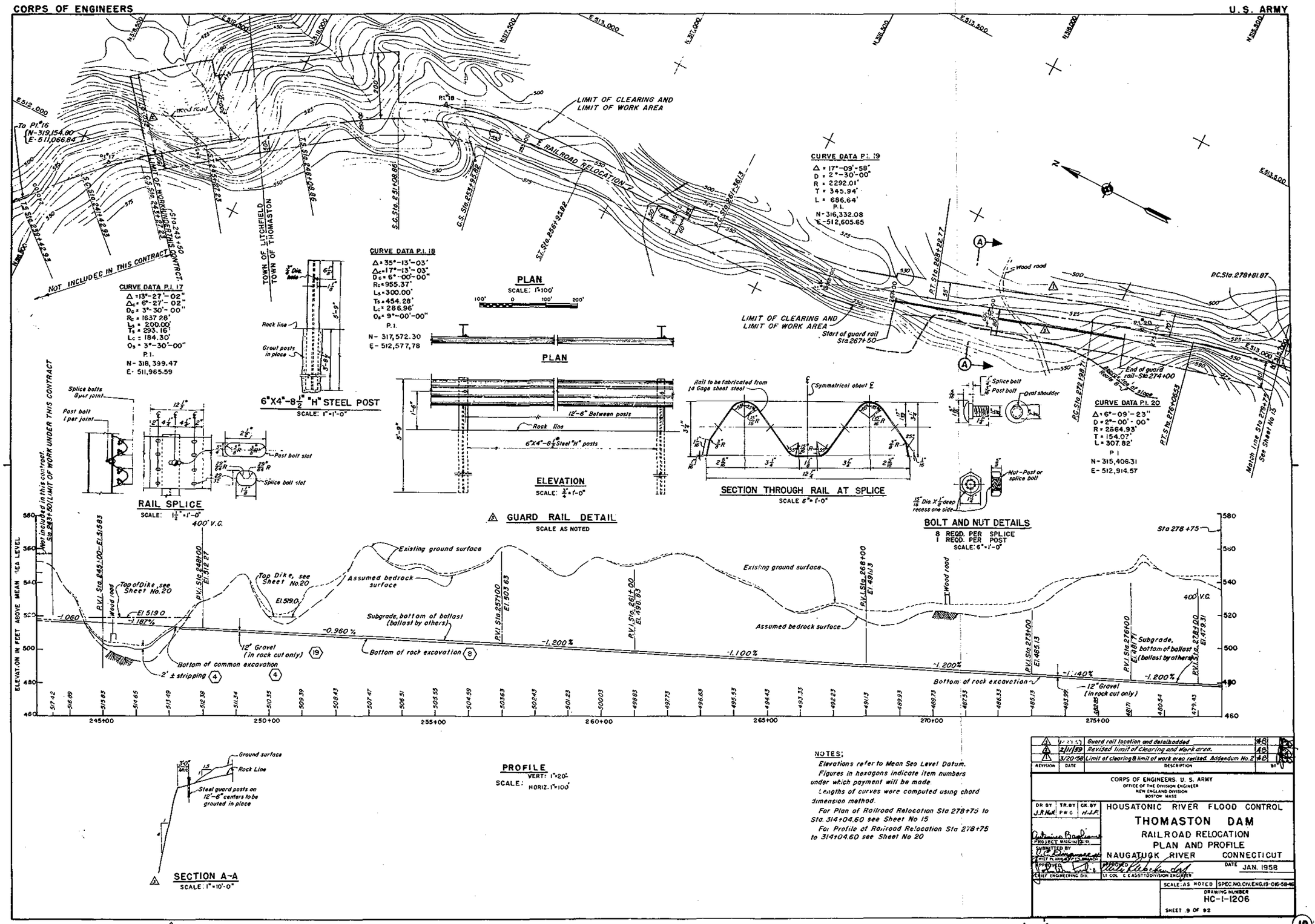
DATE JAN. 1958

SCALE AS SHOWN | SPEC NO. CIV. ENG. 19 016-58-46

DRAWING NUMBER HC-1-1204

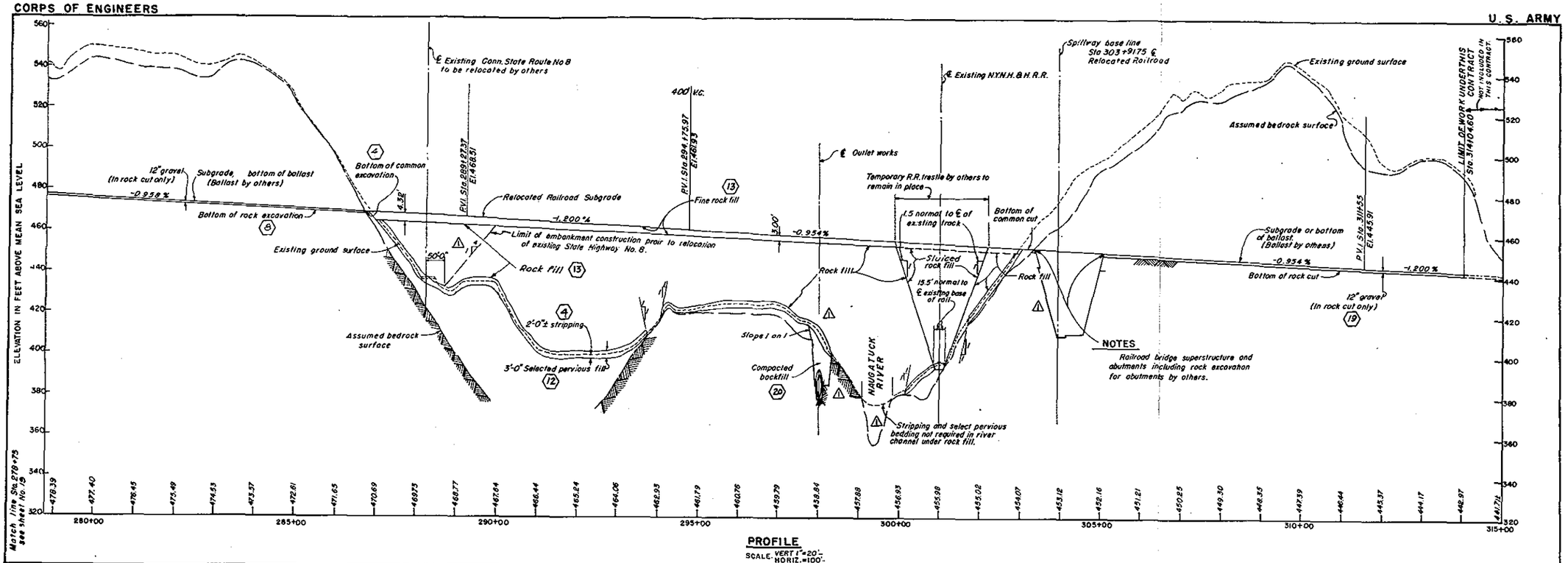
SHEET 17 OF 52

(17)


CORPS OF ENGINEERS
U.S. ARMY
LIMIT OF CLEARING AND LIMIT OF WORK AREA
RAILROAD RELOCATION
NOT INCLUDED IN THIS CONTRACT
CURVE DATA P.I. 17
Δ = 13°-27'-02"
Δc = 6°-27'-02"
Dc = 3°-30'-00"
Rc = 1637.28'
Ls = 200.00'
Ts = 293.16'
Lc = 184.30'
Os = 3°-30'-00"
P.I.
N- 318,399.47
E- 511,965.59
CURVE DATA P.I. 18
Δ = 35°-13'-03"
Δc = 17°-13'-03"
Dc = 6°-00'-00"
Rc = 955.37'
Ls = 300.00'
Ts = 454.28'
Lc = 286.96'
Os = 9°-00'-00"
P.I.
N- 317,572.30
E- 512,577.78
CURVE DATA P.I. 19
Δ = 17°-09'-58"
D = 2°-30'-00"
R = 2292.01'
T = 345.94'
L = 686.64'
P.I.
N- 316,332.08
E- 512,605.65
CURVE DATA P.I. 20
Δ = 6°-09'-23"
D = 2°-00'-00"
R = 2864.93'
T = 154.07'
L = 307.82'
P.I.
N- 315,406.31
E- 512,914.57
PLAN
SCALE: 1"=100'
6"X4"-8½" "H" STEEL POST
SCALE: 1"=1'-0"
RAIL SPLICE
SCALE: 1½"=1'-0"
ELEVATION
SCALE: ¾"=1'-0"
GUARD RAIL DETAIL
SCALE AS NOTED
SECTION THROUGH RAIL AT SPLICE
SCALE 6"=1'-0"
BOLT AND NUT DETAILS
8 REQD. PER SPLICE
1 REQD. PER POST
SCALE: 6"=1'-0"
PROFILE
SCALE: VERT: 1"=20' HORIZ: 1"=100'
SECTION A-A
SCALE: 1"=10'-0"
ELEVATION IN FEET ABOVE MEAN SEA LEVEL
Existing ground surface
Assumed bedrock surface
Subgrade, bottom of ballast (ballast by others)
Bottom of rock excavation
Bottom of common excavation
12" Gravel (in rock cut only)
Top of Dike, see Sheet No. 20
Top Dike, see Sheet No. 20
Not included in this contract. Sta 243+50 LIMIT OF WORK UNDER THIS CONTRACT
Sta 278+75
Match line Sta 278+75 See Sheet No 15
NOTES:
Elevations refer to Mean Sea Level Datum.
Figures in hexagons indicate item numbers under which payment will be made.
Lengths of curves were computed using chord dimension method.
For Plan of Railroad Relocation Sta 278+75 to Sta 314+04.60 see Sheet No 15
For Profile of Railroad Relocation Sta 278+75 to 314+04.60 see Sheet No 20
Guard rail location and detailsadded
Revised limit of clearing and work area.
Limit of clearing & limit of work area revised. Addendum No. 2
REVISION
DATE
DESCRIPTION
BY
CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.
DR. BY J.R.McK.
TR. BY P.W.G.
CK. BY H.J.F.
HOUSATONIC RIVER FLOOD CONTROL
THOMASTON DAM
RAILROAD RELOCATION
PLAN AND PROFILE
NAUGATUCK RIVER CONNECTICUT
PROJECT ENGINEER
SUBMITTED BY
APPROVED
CHIEF ENGINEERING DIV.
APPROVED
LT. COL. C.E. ASST. TO DIVISION ENGINEER
DATE JAN. 1958
SCALE: AS NOTED
SPEC. NO. CIV. ENG. 19-016-58-46
DRAWING NUMBER HC-1-1206
SHEET 9 OF 92
19

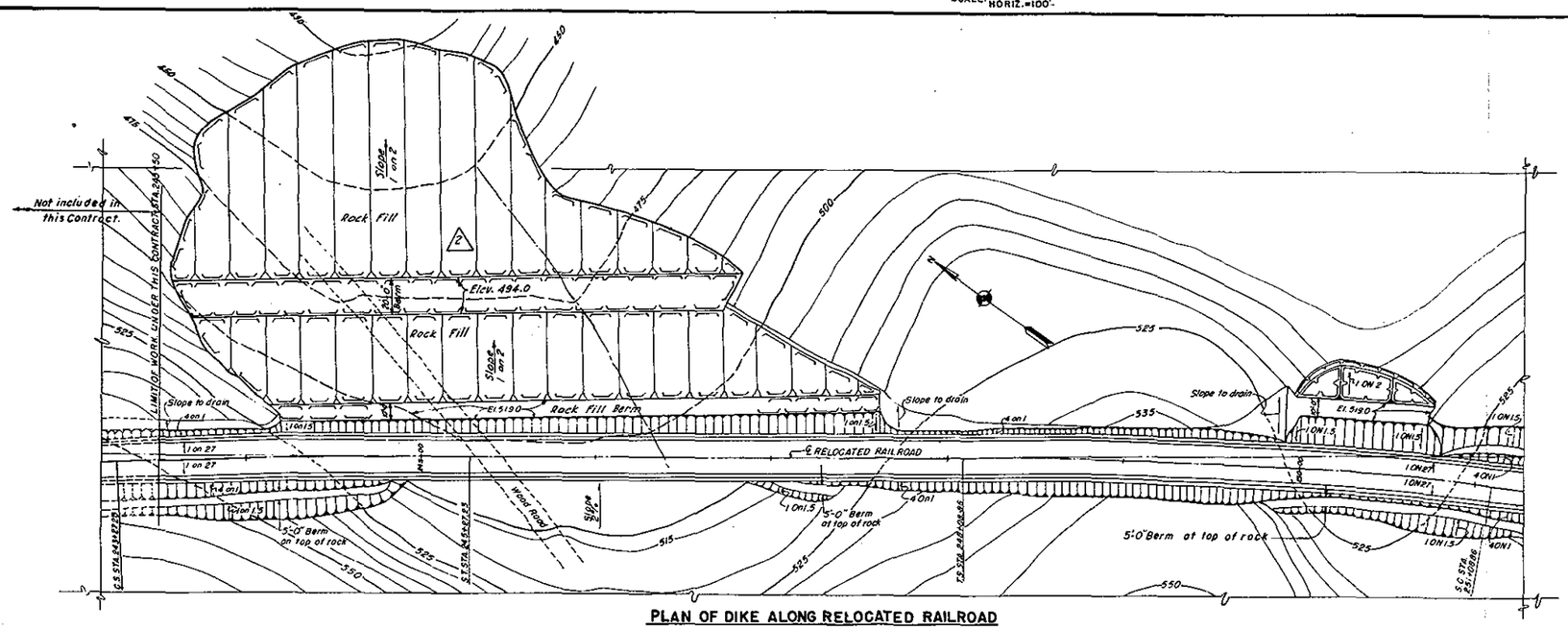
CORPS OF ENGINEERS

U. S. ARMY



PROFILE

SCALE: VERT 1"=20'- HORIZ.=100'-



PLAN OF DIKE ALONG RELOCATED RAILROAD

SCALE 1" = 30'

NOTES:

Elevations refer to Mean Sea Level Datum.
Figures in hexagons indicate item number under which payment will be made.
For general plan see sheet No. 15.
For Plan of R.R. Sta. 243+50 to Sta. 278+75 see sheet No. 19.
For Relocated Railroad Sections see sheet No. 21. through sheet No. 27
For "TABLE OF BOTTOM WIDTHS" see Sheet No. 21

REVISION	DATE	DESCRIPTION	BY
2	2/11/59	Plan revised.	RB
1	3/17/58	Misc. revisions. Addendum No. 1	RB

CORPS OF ENGINEERS. U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON MASS

DR. BY J. R.M.N. | TR. BY P.W.G. | CK. BY H.J.F.

HOUSATONIC RIVER FLOOD CONTROL
THOMASTON DAM
RAILROAD RELOCATION
PROFILE AND DIKE PLAN
NAUGATUCK RIVER CONNECTICUT

PROJECT ENGINEER
SUBMITTED BY
CHIEF PLANN. & PROJ. BRANCH
APPROVED
CHIEF ENGINEERING DIV.
APPROVED
LT. COL. C.E. ASST. TO DIVISION ENGINEER

DATE JAN. 1958

SCALE: AS NOTED. | SPEC. NO. CIV. ENG. 19-016-58-46

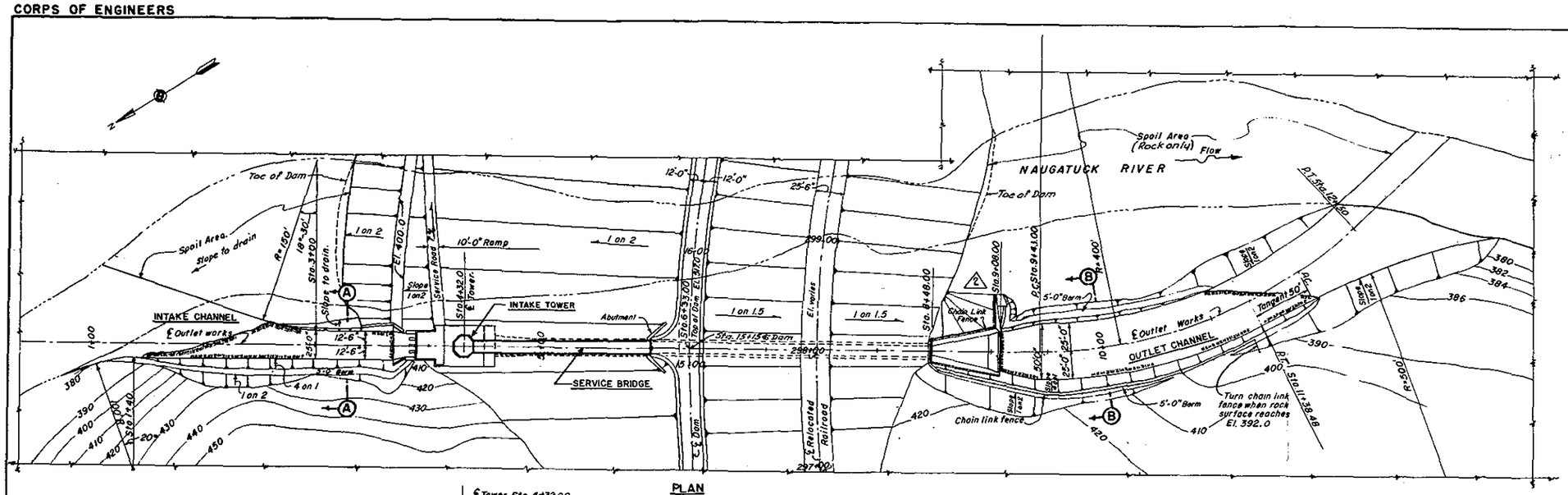
DRAWING NUMBER HC-1-1207

SHEET 20 OF 92

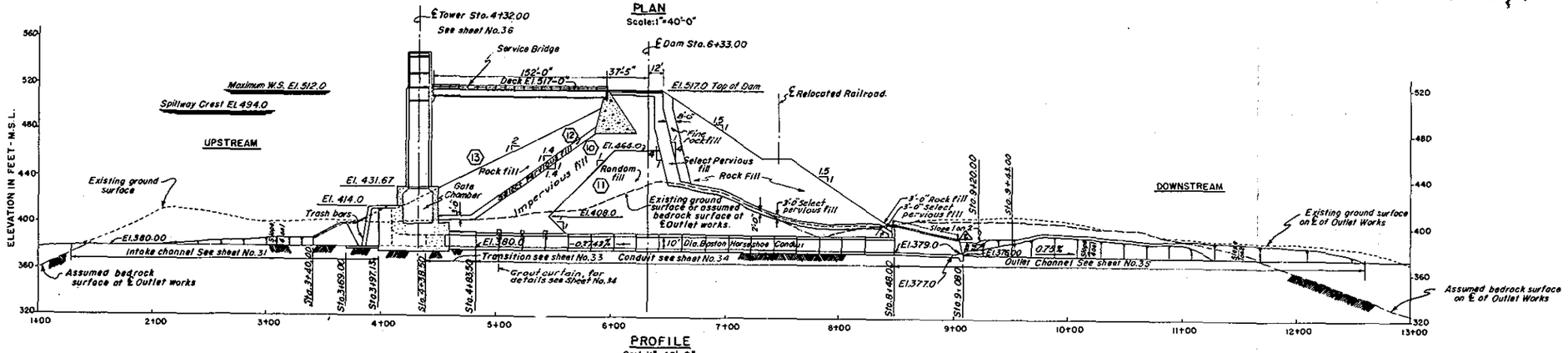
20

CORPS OF ENGINEERS

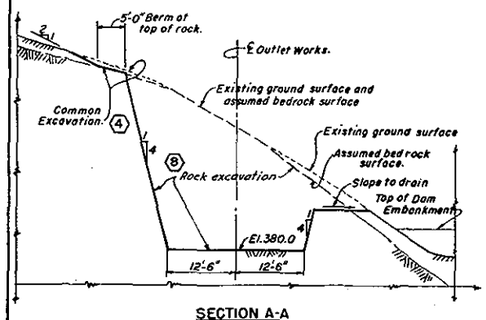
U.S. ARMY



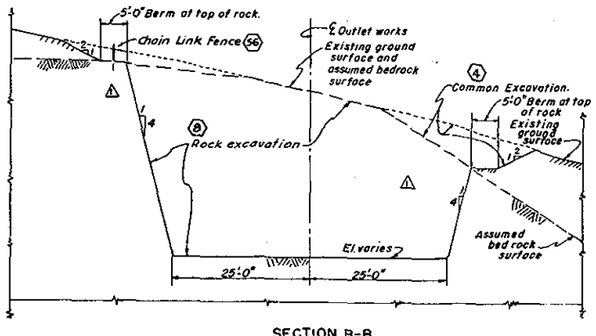
PLAN
Scale: 1" = 40'-0"



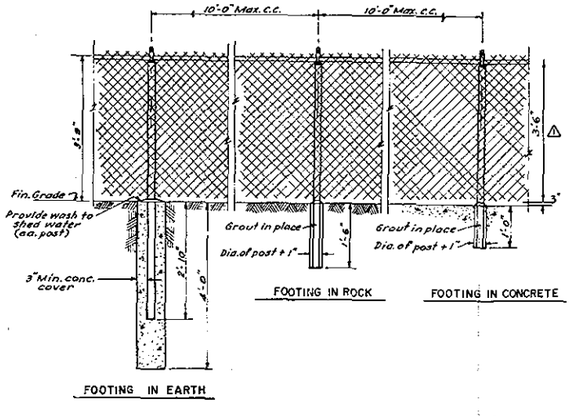
PROFILE
Scale: 1" = 40'-0"



SECTION A-A
Scale: 1" = 10'-0"



SECTION B-B
Scale: 1" = 10'-0"



DETAIL-CHAIN LINK FENCE (56)
SCALE: 3/4" = 1'-0"

NOTES:
Elevations refer to Mean Sea Level Datum.
Figures in hexagons indicate item number under which payment will be made.

REVISION	DATE	DESCRIPTION	BY
2		Conduit outlet structure revised	AB
1	3-26-58	Minor revisions. Adden. No. 2	AB

CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

DR. BY F.B.S. | TR. BY P.W.G. | CK. BY H.V.F.

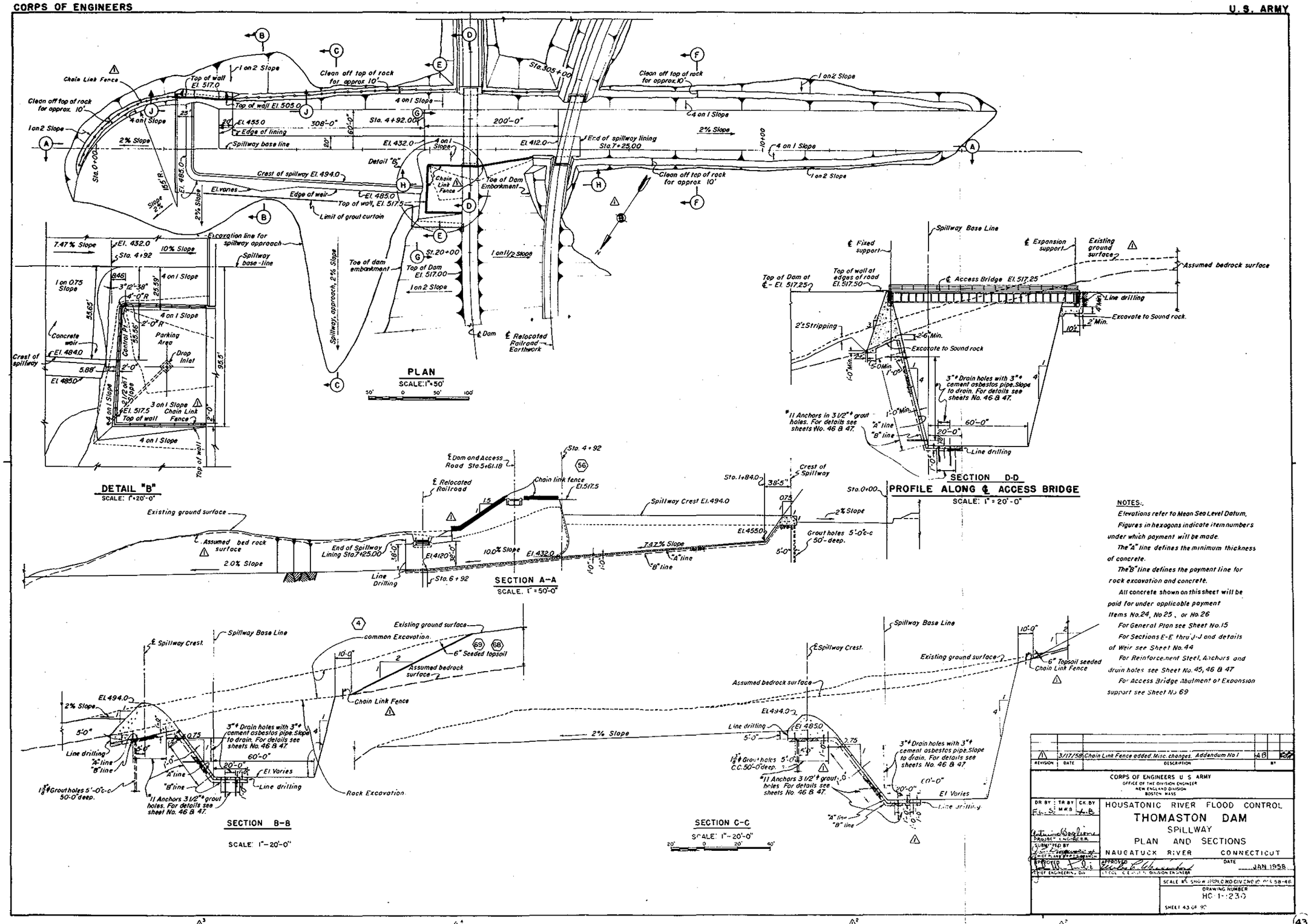
PROJECT ENGINEER
SUBMITTED BY
CHIEF PLANNING & ENGINEERING
APPROVED
CHIEF ENGINEERING DIV.
LT. COL. C.E. ASST. DIVISION ENGINEER

HOUSATONIC RIVER FLOOD CONTROL
THOMASTON DAM
OUTLET WORKS
PLAN, PROFILE & SECTIONS
NAUGATUCK RIVER, CONNECTICUT
DATE JAN. 1958

ADD. V PRINT IF

SCALE AS SHOWN | SPEC NO. CIV ENG-19-016 58-46
DRAWING NUMBER HC-1-1217
SHEET 49 OF 92

30



NOTES:

Elevations refer to Mean Sea Level Datum.

Figures in hexagons indicate item numbers under which payment will be made.

The "A" line defines the minimum thickness of concrete.

The "B" line defines the payment line for rock excavation and concrete.

All concrete shown on this sheet will be paid for under applicable payment items No. 24, No. 25, or No. 26

For General Plan see Sheet No. 15

For Sections E-E thru J-J and details of Weir see Sheet No. 44

For Reinforcement Steel, Anchors and drain holes see Sheet No. 45, 46 & 47

For Access Bridge Abutment at Expansion support see Sheet No. 69

REVISION	DATE	DESCRIPTION	BY
1	3/17/58	Chain Link Fence added. Misc. changes. Addendum No. 1	AB

CORPS OF ENGINEERS U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

DR. BY F.L.S. | TR. BY M.W.B. | CK. BY A.B.

PROJECT ENGINEER

SUBMITTED BY

CHIEF, PLANT & PROJECT BRANCH

APPROVED

CHIEF, ENGINEERING DIV.

HOUSATONIC RIVER FLOOD CONTROL

THOMASTON DAM

SPILLWAY

PLAN AND SECTIONS

NAUGATUCK RIVER CONNECTICUT

APPROVED

LT. COL. C.E. DIVISION ENGINEER

DATE JAN 1958

SCALE AS SHOWN HSPLC NO. DIV. ENG. 10 OCS 58-46

DRAWING NUMBER HC 1-1230

SHEET 43 OF 90