RECORDS TRANSMITTAL AND RECEIPT

Complete and send original and two copies of this form to the appropriate Federal Records Center for approval prior to shipment of records. See specific instructions on reverse.

PAGE 1 OF 2 PAGES

1. TO *(Complete the address for the appropriate records center serving your area)*

Federal Archives and Records Center
General Services Administration

As shown in FPMR 101-11.410-1 ▶ RHA

5. FROM *(Enter the name and complete mailing address of the office retiring the records. The signed receipt of this form will be sent to this address)*

USAED, New Orleans
Structural Design Section
Design Branch
Engineering Division

2. AGENCY TRANSFER AUTHORIZATION	**TRANSFERRING AGENCY OFFICIAL** *(Signature and title)* Carl R. Guggenheimer Chief, Structural Design Sec	**DATE** Dec 85
3. AGENCY CONTACT	**TRANSFERRING AGENCY LIAISON OFFICIAL** *(Name, office and telephone No.)* Marilyn Sullen, Records Manager, Ext. 2841 RM 141	
4. RECORDS CENTER RECEIPT	**RECORDS RECEIVED BY** *(Signature and title)*	**DATE**

Fold line ◀

6. RECORDS DATA

ACCESSION NUMBER RG (a)	FY (b)	NUMBER (c)	VOLUME (cu. ft.) (d)	AGENCY BOX NUMBERS (e)	SERIES DESCRIPTION (With inclusive dates of records) (f)	RESTRICTION (g)	DISPOSAL AUTHORITY (Schedule and item number) (h)	DISPOSAL DATE (i)	COMPLETED BY RECORDS CENTER LOCATION (j)	SHELF PLAN (k)	CONT. TYPE (l)	AUTO. DISP. (m)
a					Civil Works Project Files		AR 340-18 1518-01	Perm				
			2	1/2	(1) Fla. Ave Complex, East-T-Wall Monos, Design Comps		"	"				
					(2) Fla. Ave Complex, West-T-Wall Monos, Design Comps		"	"				
					(3) Fla. Ave Complex, West-OVHD Roller Gate Calcs, Vol I		"	"				
					(4) Fla. Ave Complex, West-OVHD Roller Gate Calcs, Vol II		"	"				
					(5) Fla. Ave Complex, West-Vert Lift Gates Calcs Vol I		"	"				
					(6) Fla. Ave Complex, West-Vert Lift Gates Calcs Vol II		"	"				
					(7) Fla. Ave Complex, West-Swing Gates, Walls & Monos Calcs		"	"				

4000 7629

RECORDS TRANSMITTAL AND RECEIPT (Continuation)	This form is to continue listing of Records Data when space on SF 135 is not adequate. Instructions for completion of SF 135 apply.	TRANSFERRING AGENCY'S NAME: Carl R. Guggenheimer, Chief, Strucural Design Section	DATE: Dec 85	PAGE: 1 OF 2 PAGES

ACCESSION NUMBER			VOLUME (cu. ft.)	AGENCY BOX NUMBERS	SERIES DESCRIPTION (With inclusive dates of records)	RESTRICTION	DISPOSAL AUTHORITY (Schedule and item number)	DISPOSAL DATE	COMPLETED BY RECORDS CENTER			
RG	FY	NUMBER							LOCATION	SHELF PLAN	CONT. TYPE	AUTO. DISP.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
					(8) Fla. Ave Complex, East & West -Bypass Channel, Des Analysis		AR 340-18 1518-01	Perm "				
					(9) Fla. Ave Complex, East & West GDM Cost Est		"	"				
					(10) Fla. Ave Complex,East- OVHD Roller Gate Design		"	"				
				2/2	(1) Detailed Design Memorandum No.8 Rigolets Lock, Volume 2		"	"				
					(2) DDM No. 8, Rigolets Lock Vol 1		"	"				
					(3) Back-Up Computations for Vol 1 (2) DDM No.8, Rigolets Lock		"	"				
					(4) Design Memorandum No.2 -General Design Supplement No. 2, Rigolets Lock Preliminary Structural Investigations		"	"				
					(5) Addendum No. 1 to Computation for DDM No.8, Rigolets Lock		"	"				
					(6) Computations for Sector Gate Study,Cantilever (2) vs. Roller Support, Rigolets Lock		"	"				
					(7) Design Study, Sector Gate Comparison, Cantilever vs Roller Support, Rigolets Lock		"	"				

STANDARD FORM 135-A (Rev. 6-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.4

BOX #1

13 AUG 85
TO BE SENT TO HOLDING AREA

DESCRIPTION

FLA. AVE. COMPLEX, EAST - T-WALL MONOS., DESIGN COMPS.
" " " WEST - " " " "
" " " " - OVHD. ROLLER GATE CALCS., VOL. I
" " " " - " " " " , " II
" " " " - VERT. LIFT GATES CALCS., VOL. I
" " " " - " " " " , " II
" " " " - SWING GATES, WALLS & MONOS. CALCS.
" " " , EAST & WEST - BYPASS CHANNEL, DES. ANALYSIS
" " " , " " - GDM COST EST.
" " " , EAST - OVHD. ROLLER GATE DESIGN

ESTIMATE OF COST

69. General. Based on September 1976 price levels, the estimated first cost of the Florida Avenue Complex is $ 9,237,230 This estimate consists of $2,400 for lands and damages, $ 257,440 for relocations, $ 7,349,460 for levees and floodwalls, $ 882,430 for engineering and design, and $ 745,500 for supervision and administration. The detailed estimate of first cost is shown in Table 1.

TABLE 1

LAKE PONTCHARTRAIN BARRIER PLAN AND CHALMETTE AREA PLAN

FLORIDA ~~FORRIDA~~ AVENUE COMPLEX

ESTIMATE OF FIRST COST
(September 1976 price levels)

Cost Account No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	I. Floodwall Reach, West IHNC				
	CONSTRUCTION				
11	Levees and Floodwalls				
	I-walls and T-walls				
	Steel sheet piling, PZ-27	1530	s.f.	8.00	12,240
	Steel sheet piling, PMA-22	16610	s.f.	8.00	132,880
	Steel sheet piling, PSA-22	350	s.f.	8.00	2,800
	Prestressed conc. piling 12" X 12"	15,280	l.f.	15.00	229,200
	Concrete in stabilization slab	80	c.y.	80.00	6400
	Concrete in base slab	610	c.y.	80.00	48,800
	Concrete in walls, columns, and beams	410	c.y.	150.00	61,500
	Portland cement	3100	c.w.t	2.50	7,750
	Steel Reinforcement	882,600	lbs.	0.35	308,910
	Structural steel	46,000	lbs.	1.75	80,500
	Waterstops, L-type	35	l.f.	15.00	530
	Waterstops, 3-bulb type	340	l.f.	5.00	1700
	Gate seals	180	l.f.	20.00	3600
	Sack-rubbed finish	16,600	s.f.	0.40	6,640
	Structure excavation	2,300	c.y.	5.00	11,500
	Structure backfill	2,870	c.y.	6.00	17,220
	Expansion joint filler	600	s.f.	1.50	900
	Concrete removal	42	c.y.	30.00	1,600
	Miscellaneous metal	[illegible]	lbs.	1.20	[illegible]
	Trolley for overhead roller gates	1	Job	500.00	500
	Fertilizing & seeding	1.34	acre	400.00	540
	Clearing and grubbing	2.34	acre	500.00	1,170
	Subtotal, I-wall and T-wall, West IHNC				955,780
	offset Vertical Lift Gate Structure				
	Steel sheet piling, PMA-22	2,150	s.f.	6.00	12,900
	Prestressed conc. piling 14" X 14"	6,000	l.f.	16.00	96,000
	Concrete in stabilization slab	~~25~~ 25	~~c.y.~~ c.y.	~~80.00~~ 80.00	2,000

TABLE 1 (cont'd)

Cost Account No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
	Concrete in base slab	300	C.Y.	80.00	24,000
	~~slab~~				
	Concrete in walls (El. -18.5 to +2)	251	C.Y.	150.00	37,650
	Concrete in deck slab	91	C.Y.	180.00	16,380
	Concrete in walls (El. +2 to +27)	147	C.Y.	150.00	22,050
	Concrete in floodwall	23	C.Y.	150.00	3,450
	Concrete in stairs				
	Concrete in ~~machine room~~ slab	64	C.Y.	80.00	5,120
	Concrete in machine room walls	41	C.Y.	150.00	6,150
	Concrete in roof slab	17	C.Y.	200.00	3,400
	Portland cement	4,850	Cwt.	2.50	12,130
	Steel reinforcement	161,700	lbs.	0.25	42,600
	Structural steel				
	Structure excavation	3,250	C.Y.	2.00	7,750
	Structure backfill	2,250	C.Y.	4.00	9,000
	Miscellaneous metal	91,440	lbs.	1.50	137,160
	Trolleys				
	Mechanical equipment	1			
	Electrical equipment and generator	1	Job	32,000.00	32,000
	Subtotal, Vertical Lift Gate Structure				654,590
	Vertical Lift Gate ~~structure~~				
offset →	Structure approaches				
	Prestressed conc. piling, 14" X 14"	3,424	L.F.	16.00	54,784
	Concrete in stabilization slab	53	C.Y.	80.00	4,240
	Concrete in base slab	200	C.Y.	80.00	16,000
	Concrete in walls	200	C.Y.	150.00	30,000
	Portland cement	1,000	Cwt.	2.50	2,500
	Steel reinforcement	50,000	lbs.	0.25	12,500
	Waterstops, L-type	100	L.F.	20.00	2,000
	Waterstops, 3-bulb type	110	L.F.	25.00	2,750
	Sack-rubbed finish	2,500	S.F.	0.40	1,000
	Expansion joint filler	700	S.F.	1.50	1,050
	Subtotal, Approaches, West IHNC				377,590
offset →	Cofferdam, West IHNC				
	Steel sheet piling, PS-32	40,350	S.F.	8.50	342,980
	Structure excavation	2,700	C.Y.	6.50	17,550
	Structure backfill (shell)	4,550	C.Y.	10.00	45,500
	Dewatering system	1	Job	50000.00	50,000

Cost Account No.	Item	Estimated Quantity	Unit	Unit Price $	Estimated Amount $
	6" dia. waterline thru T-wall	1	each	1,500	1,500
	5" dia. powerline thru T-wall	2	each	5,600	11,200
	54" dia. sewer force main thru T-wall	1	each	25,000	25,000
	48" dia. waterline thru T-wall	1	each	3,000	3,000
	Subtotal, Pipelines and Powerlines				73,700
	Railroad Falsework for Swing Gate	1	Job	16,000	16,000
	Subtotal, RELOCATIONS				89,700
	Contingencies 20%				17,940
	Subtotal				107,640
30	Engineering and design 11.6% ± (based on estimate of actual E&D required)				12,490
31	Supervision and administration 9.8% ± (based on estimate of the actual S&A required)				10,550
	TOTAL, RELOCATIONS FOR FLOODWALL REACH, WEST IHNC				130,680
	I. TOTAL, FLOODWALL REACH, WEST IHNC				4,863,340
	II. FLOODWALL REACH, EAST IHNC				
	CONSTRUCTION				
11	Levees and Floodwalls, East IHNC				
	I-walls and T-walls				
	Steel sheet piling, PZ-27	1,450	s.f.	6.00	75,600
	Steel sheet piling, PMA-22	9,100	s.f.	8.00	72,800
	Steel sheet piling, PSA-22	500	s.f.	8.00	4,000
	Prestressed conc. piling, 12" X 12"	14,500	l.f.	15.00	217,500
	Concrete in stabilization slab	70	c.y.	80.00	5,600
	Concrete in base slab	540	c.y.	80.00	43,200
	Concrete in walls, columns, and beams	285	c.y.	150.00	42,750
	Portland cement	4,580	c.w.t	2.50	11,450
	Steel reinforcement	389,400	lbs.	0.35	136,220
	Structural steel	32,500	lbs.	1.75	56,880

Cost Account No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	Pulling steel sheet piling	40,350	s.f.	1.00	40,350
	Salvage steel	650	tons	30.00	-(19,500)
	Subtotal, Cofferdam, West IHNC				476,890
	offset → Bypass Channel, West IHNC				
	Steel sheet piling, PZ-38 (USS ~~Kor-Ten B~~ EX-TEN 55)	48,600	s.f.	9.40	456,840
	Structural steel				
	Steel H-piles, HP 14 X 73	3,234	l.f.	14.00	45,260
	Pulling steel sheet piling	48,600	s.f.	1.00	48,600
	Pulling steel H-piles	3,234	l.f.	3.00	9,700
	Concrete in deadmen			6.00	4,500
	Steel reinforcement	11,037	lbs.	0.35	3,870
	Channel excavation	2,700	c.y.	6.50	17,550
	Structure backfill	4,500	c.y.	3.50	15,750
	Concrete removal	80	c.y.	50.00	4,000
	Salvage steel	1,200	Tons	30.00	-(36,000)
	Subtotal, Bypass Channel, West IHNC				767,300
	Subtotal, Vertical Lift Gate Structure, Approaches, Cofferdam, Bypass Channel West IHNC				2,476,540
	Subtotal, Levees and Floodwalls, West IHNC				3,231,640
	Environmental protection (0.5%)				16,200
	Subtotal				3,247,840
	Contingencies 20%±				641,570
	Subtotal				3,897,410
30	Engineering and ~~design~~ 11.6%± (based on estimate of actual E&D required)				452,100
31	Supervision and administration 9.8%± (based on estimate of the actual S&A required)				381,950
	TOTAL, CONSTRUCTION FOR FLOODWALL REACH, WEST IHNC				4,731,460
01	LANDS AND DAMAGES				1,200
	RELOCATIONS				
02	Relocations				
	offset → Pipelines and Powerlines				
	Overhead Powerlines	3	each	5,000	15000

TABLE 1 (cont'd)

Cost Account No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
				$	$
	Waterstops, L-type	45	l.f.	15.00	680
	Waterstops, 3-bulb type	[illegible]	l.f.	5.00	1,950
	Gate seals	100	l.f.	20.00	2,000
	Sack-rubbed finish	18,950	s.f.	0.40	7,580
	Structure excavation	1,480	c.y.	5.00	7,400
	Structure backfill	1,600	c.y.	6.00	9,600
	Expansion joint filler	[illegible]	[illegible]	[illegible]	1240
	Miscellaneous metal	[illegible]	[illegible]	[illegible]	2,400
	Trolleys for overhead roller gates	[illegible]	Job	500.00	500
	Fertilizing and seeding	[illegible]	[illegible]	[illegible]	690
	Clearing and grubbing	2.71	acre	500.00	1,360
	Subtotal, I-wall and T-wall, East IHNC				701,400
	Subtotal, Vertical Lift Gate Structures, East IHNC (Same as West IHNC)				654,590
offset	Vertical Lift Gate Structure Approaches, East IHNC				
	Prestressed conc. piling, 14" X 14"	[illegible]	l.f.	[illegible]	41,600
	Concrete in stabilization slab	[illegible]	[illegible]	[illegible]	6,200
	Concrete in base slab	845	c.y.	[illegible]	67,600
	Concrete in walls	215	c.y.	150.00	30,100
	Portland cement	5,880	c.wt.	[illegible]	14,700
	Steel reinforcement	106,200	lbs.	0.35	37,170
	Waterstops, L-type				2600
	Waterstops, 3-bulb type	200	l.f.	5.00	1,000
	Sack-rubbed finish	2,950	s.f.	[illegible]	1,180
	Expansion joint filler	775	s.f.	1.50	1,160
	Subtotal, ~~Appraches~~ Approaches, East IHNC				[illegible],910
offset	Cofferdam, East IHNC				
	Steel sheet piling, PS-32	46,650	s.f.	8.50	3[illegible],520
	Structure excavation	3,100	c.y.	6.50	20,150
	Structure backfill	4,350	c.y.	[illegible]	4,350
	Dewatering system	1	job	50,000	50,000
	Pulling steel sheet piling	[illegible]			[illegible]
	Salvage steel	650	Tons	30.00	-(19,500)
	Subtotal, Cofferdam, East IHNC				498,180
offset	Bypass Channel, East IHNC				
	Steel sheet Piling, PZ-38 ~~(USS X-ten)~~ (USS EX-TEN 55)	[illegible]	s.f.	[illegible]	477,520
	Structural steel	327,800	lbs.	0.65	213,070
	Steel H-piles, HP ~~14X73~~ 14 X 73	3,381	l.f.	14.00	47,330
	Pulling steel sheet piling	50,800	s.f.	[illegible]	50,800

TABLE 1 (cont'd)

Cost Account No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
	Pulling steel H-piles	3,381	l.f.	3.00	10,140
	Concrete in deadmen	90	c.y.	60.00	5,400
	Steel reinforcement	12,420	lbs.	0.35	4,350
	Channel excavation	2,800	c.y.	6.50	18,200
	Structure backfill	3,000	c.y.	3.50	10,500
	Concrete removal	90	c.y.	50.00	4,500
	Salvage steel	[illegible]	[illegible]	[illegible]	-([illegible])
	Subtotal, Bypass Channel, East IHNC				804,310
	Subtotal, Vertical Lift Gate Structure, Approaches, Cofferdam, Bypass Channel, East IHNC				3,160,990
	Subtotal, Levees and Floodwalls				2,862,390
	Environmental protection (0.5%)				14,320
	Subtotal				2,876,710
	Contingencies 20% ±				575,340
	Subtotal				3,452,050
30	Engineering and design 11.6% ± (based on estimate of actual E&D required)				400,440
31	Supervision and administration 9.8% ± (based on estimate of actual S&A required)				339,300
	TOTAL, CONSTRUCTION FOR FLOODWALL REACH, EAST IHNC				4,190,790
01	LANDS AND DAMAGES, EAST IHNC	1	job	1200	1200
	RELOCATIONS, EAST IHNC				
02	Relocations, East IHNC				
	Pipelines and Powerlines				
	Overhead telephone line	1	each	[illegible]	[illegible]
	Overhead powerlines	4	span	[illegible]	20,000
	6" dia. water main thru T-wall	1	each	1,500	1,500
	5" dia. powerline thru T-wall	3	each	5,600	16,800
	54" dia. sewer force main thru T-wall	1	each	25,000	25,000
	36" dia. water main thru T-wall	1	each	[illegible]	[illegible]
	66" dia. sewer force main thru T-wall	1	each	[illegible]	[illegible]
	8" dia. gas line - relocate	1	each	2,500	2,500
	Subtotal, Pipelines and Powerlines				116,800
	Railroad Falsework for Swing Gate	1	job	8000	8,000

TABLE 1 (cont'd)

Cost Account No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
	Subtotal, ~~Relocations~~ RELOCATIONS, EAST, IHNC				124,800
	Contingencies 20%±				25,000
	Subtotal				149,800
30	Engineering and design 11.6% (based on estimate of actual E&D required)				17,400
31	Supervision and administration 9.8% (based on estimate of actual S&A required)				14,700
	TOTAL, RELOCATIONS FOR FLOODWALL REACH, EAST IHNC				181,900
	II. TOTAL, FLOODWALL REACH, EAST IHNC				4,373,890
	TOTAL BOTH FLOODWALL REACHES, WEST AND EAST IHNC (I & II)				~~9,236,030~~ 9,237,230 RSP

PROJECT		Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex-West			RTG	3 Jan 96
SUBJECT			CHECKED BY	DATE

I-Wall, T-Wall, Harbor Rd Gate
North Rail road tracks (Sta 0+00 to Sta 4+16.47)

	Est Quantity	Unit Price	Est Amount
Steel sheet piling, PZ-27	800	8	6400
Steel sheet piling, PMA-22	8000	8	64000
Steel sheet piling, PSA-22	150	8	1200
Conc Piling	7710	15	115650
Conc Stab slab	40	80	3200
Conc Base slab	290	80	23200
Conc walls	190	150	28500
Cement	2750	2.50	6890
Rebar	61900	0.35	21670
Structural steel	10800	1.75	18900
Waterstops, L-type	25	15.0	380
Waterstops, 3-Bulb	120	5.0	600
Gate seals	45	20.	900
Sack-rubbed	6800	0.4	2720
Excav.	2150	5.0	10750
Fill	720	6.0	4320
Jt Matl	210	1.5	320
Misc. Metal	600	15	900
Fert./seeding	0.4	400	160
Clearing/grubbing	0.7	500	350
Concrete removal	42	50	2100
		Σ	313,100
Environmental Prot	0.5%		1570
			314,670
Contingencies	20%		62,940
			377,610
E/D	11.6%		43,810
S/A	9.8%		37010
			$ 458,430

PROJECT	Page __ of __	COMPUTED BY	DATE
SUBJECT		CHECKED BY	DATE

I-Wall - Conc Vol = 20.37 CY (Walls)
Cement = 105.31 cwt
Rebar = 625.65 #
PZ-27 = 800 sf
'L' = 23.5'
3'-B = 9'
Jt Matl = 41.25 sf

T-Wall - Conc Vol = 252 CY (~~Mat~~ Base Slab)
Conc Vol = 185.6 CY (Walls)
Conc Vol = 33.55 CY (Stab. Slab)
Cement = 2435.85 cwt
PMA-22 = 6938.92 sf
Conc piling = ~~5633 l.ft.~~ 6687 eft
3'-B = 107.75 ft
Jt Matl = 167.6 sf
Rebar = 56460 #

168
42
210

315
12
43

1
106.31
200
2436
2742

1
4800
56460
626
61886

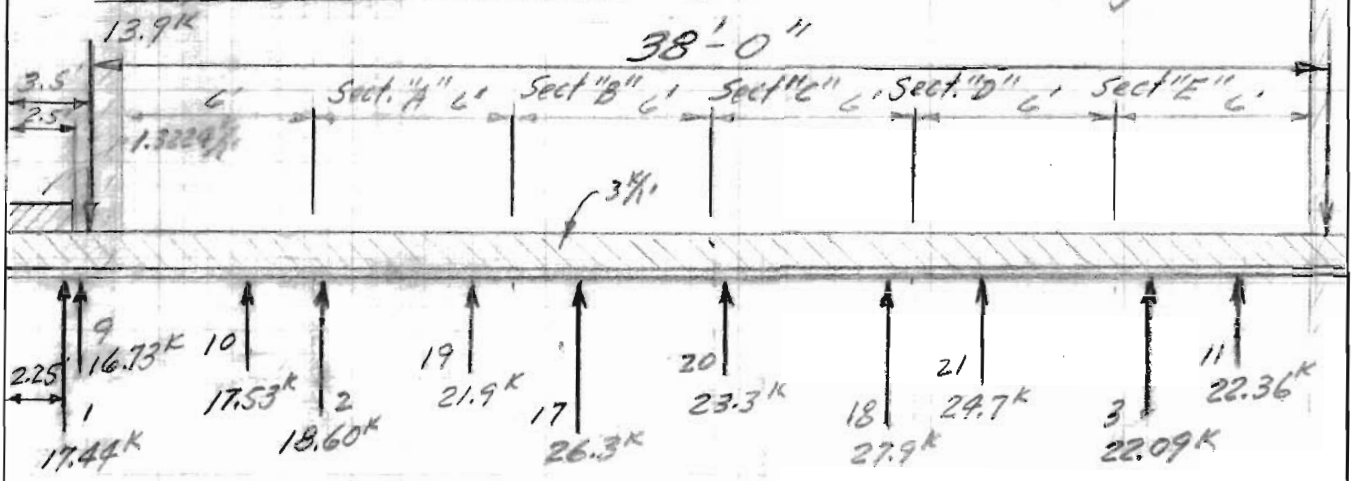
252 80 1050 1019
240 34 6939 6687
492 114 7989 13706

20.37
185.60

COMPUTATION SHEET

36'-0" OVERHEAD ROLLER GATE @ FLORIDA AVENUE

3. Longitudinal Steel (CASE III Loading) Sect "F"



T-Wall Weight

$(7.6)(1)(1)(0.15) = 1.14$ K/L'

$\frac{1}{2}(7.6)(0.32)(1)(0.15) = 0.1824$ K/L'

1.3224 K/L'

Moment @ Sect. "A"

Slab: 3×10.5	$= -31.5^K$	$\times$ 5.25	$= -165.38^{1K}$
Wall: 1.3224×2.5	$= -3.306^K$	$\times$ 9.25	$= -30.58^{1K}$
Pile #1	$= 17.44^K$	$\times$ 8.25	$= 143.88^{1K}$
Pile #9	$= 16.73^K$	$\times$ 8.00	$= 133.84^{1K}$
Column #1	$= -13.9^K$	$\times$ 7.00	$= -97.30^{1K}$
Pile #10	$= 17.53^K$	$\times$ 3.00	$= 52.59^{1K}$

$\Sigma V = 2.994^K \uparrow$ $\quad \Sigma M = -37.05^{1K} \circlearrowright$

Moment @ Sect. "B"

Slab: 3×16.5	$= -49.50^K$	$\times$ 8.25	$= -408.38^{1K}$
Wall:	$= -3.306^K$	$\times$ 15.25	$= -50.42^{1K}$
Pile #1	$= 17.44^K$	$\times$ 14.25	$= 248.52^{1K}$
Pile #9	$= 16.73^K$	$\times$ 14.00	$= 234.22^{1K}$
Column #1	$= -13.9^K$	$\times$ 13.00	$= -180.70^{1K}$
Pile #10	$= 17.53^K$	$\times$ 9.00	$= 157.77^{1K}$
Pile #2	$= 18.60^K$	$\times$ 5.75	$= 106.95^{1K}$
Pile #19	$= 21.90^K$	$\times$ 1.25	$= 27.38^{1K}$

$\Sigma V = 25.494^K \uparrow$ $\quad \Sigma M = 135.34^{1K} \circlearrowright$

(for Item No., see Utility Sheet 3)

REASONABLE CONTRACT ESTIMATE					SHEET OF
PROJECT Florida Avenue Complex, Utility Relocations					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	WEST SIDE				
P-1	OH Power				5,000.00
W-1	Water Main 6"ϕ				1,500.00
P-2	OH Power				5,000.00
E-1	Power 5"ϕ				5,600.00
E-2	Power 5"ϕ				5,600.00
S-1	Sewer Force Main 54"ϕ				25,000.00
W-2	Water Main 48"ϕ				21,000.00
P-3	OH Power				5,000.00
				TOTAL	73,700.00
	EAST SIDE				
T-1	OH Telephone				5,000.00
S-2	Sewer Force Main 66"ϕ				30,000.00
P-4	OH Power				5,000.00
W-3	Water Main 6"ϕ				1,500.00
P-5	OH Power				5,000.00
W-4	Water Main 36"ϕ				16,000.00
S-3	Sewer Force Main 54"ϕ				25,000.00
G-1	Gas 8"ϕ				2,500.00
E-3	Power 5"ϕ				5,600.00
E-4	Power 5"ϕ				5,600.00
P-6	OH Power				5,000.00
E-5	Power 5"ϕ				5,600.00
P-7	OH Power				5,000.00
				TOTAL	116,800.00

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OF—252-653

(CES 14 Sept 96)

Revised for a longer T-Wall.

REASONABLE CONTRACT ESTIMATE				Mar. 77	SHEET OF
PROJECT FLORIDA AVENUE COMPLEX - WEST IHNC (PEPPER & ASSOC. -0+10 to 4+63.46)					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Wall	182.3	cy		
	Columns	8.5	cy		
	Base Slab	267.4	cy		
	Stabilization Slab	36.0	cy		
	Sill	7.5	cy		
	Cement	2527.0	cwt		
	Reinforcement	64400.0	lb.		
	Steel Sheet Piling, PMA-22	7900	sf		
	Steel Sheet Piling, PZ -27	900	sf		
	Concrete Prestressed Piles 12"X 12"	7825	lf		
	Waterstops, L - Type	25	lf		
	Waterstops, 3-Bulb Type	149	lf		
	Construction Joint Material	225	sf		
	Structural Steel				
	Gates	19800	lb.		
	Embedded Steel	1600	lb.		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OP—262-683

Mar. 77

REASONABLE CONTRACT ESTIMATE Penner & Assoc. | SHEET OF

PROJECT: FLORIDA AVENUE COMPLEX - T-WALL, WEST (0+40. to 3+79.71)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Base Slab	200	cy		
	Walls				
	Walls	150	cy		
	Stabilization Slab	227	cy		
	Cement	1890	cwt.		
	Steel Sheet Piling; PMA 22	5500	sf		
	Reinforcement	48000	lb.		
	Concrete Prestressed Piling 12"X12"	5500	lf		
	Waterstops, 3-Bulb Type	140	lf		
	Construction Joint Material	180	sf		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

PROJECT		COMPUTED BY	DATE
PRELIMINARY - FLORIDA AVE. WEST	Page __ of __	HMB	Mar. 77
SUBJECT		CHECKED BY	DATE
ESTIMATE CONCRETE, CEMENT (0+40 to 3+79.71)			

CONCRETE:

Base Slab = 2.5(8)(263.71) = 5274.2 cf = 195.34 cy

(Use 200 c y)

Walls:

W/L sta 0+40. to sta 1+19.09

(1(11) + $11^2/24(\frac{1}{2})$)79.09 = 1069.3 cf = 39.6 cy

W/L sta 1+95.09 to sta 3+79.71

(1(12) + $12^2/24(\frac{1}{2})$)184.62 = 2769.3 cf = 102.6 cy

Total = 142.2 cy

(Use 150 cy)

Stabilization Slab = 8(263.71)(4/12) = 703.2 cf = 26.1 cy

(Use 27 cy)

Cement = 363.64 x 5.17 = 1880.02 cwt.

(Use 1890 cwt.)

PROJECT		COMPUTED BY	DATE
FLORIDA AVENUS - WEST, PRELIMINARY	Page — of —	HMB	Mar. 77
SUBJECT		CHECKED BY	DATE
ESTIMATE STEEL SHEET PILING (0+40 to 3+79.71, W/L)			

W/L sta. 0+40. to sta. 1+19.09:

Top sheet piling = EL. +1.25

Bottom sheet piling = EL. -20.

A = 79.09 x 21.25 = 1680.66 sf

W/L Sta. 1+95.09 to sta. 3+79.71:

Top sheet piling = EL. +0.25

Bottom sheet piling = EL. -20

A = 184.62 x 20.25 = 3738.56 sf

Total = 5419.22 sf

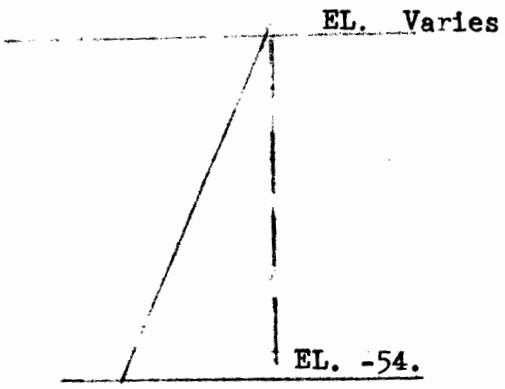
(Use 5500 sf)

PROJECT	Page — of —	COMPUTED BY	DATE
SUBJECT ESTIMATE T-WALL REINFORCEMENT (0+40 to 3+79.72,W/L)		CHECKED BY	DATE

Reinforcement:

		Mono. 3			
Long Stem	NO. 5	22 x 77.83 x 1.043	=	~~1785~~	lb.
		Monm. 6,7,8			
		24 x 180.87 x 1.043	=	4528	
		Mono. 3			
	No. 6	234 x 13.5' x 1.502	=	4745	
Base Slab Long.		30 x 77.83 x 1.502	=	3508	
		Mono. 6,7,8			
all walls		540 x 14.5' x 1.502	=	11761	
Base Slab		30 x 137.12' x 1.502	=	6179	
Long		16 x 48.75' x 1.502	=	1172	
		Mono. 3			
	No.8	160 x 10' x 2.670	=	~~4272~~	
		Mono. 6,7,8			
		374 x 10' x 2.670	=	9986	
				47937	

PROJECT	Page __ of __	COMPUTED BY HMB	DATE Mar. 77
SUBJECT ESTIMATE PRESTRESSED CONCRETE PILE - (0+40 to 3+79.71)		CHECKED BY	DATE



$$\text{Length} = \Delta_{\text{Elev}} \sqrt{1 + 1/n^2}$$

MONOLITH	Δ_{ELEV}	NO. PILES	BATTER	PILE LENGTH	LENGTH
3	55.5	16	2:1	62'	992'
3	55.5	1	4:1	57'	57'
	54.5	8	2:1	61'	488'
	54.5	8	2:1	61'	488'
6	54.5	18	2:1	61'	1098'
6	54.5	2	0	54.5'	109'
7	54.5	14	2:1	61'	854'
7	54.5	4	0	54.5'	218'
8	54.5'	16	2:1	61'	976'
8	54.5'	3	4:1	56'	168'
				TOTAL =	5448'

(Use 5500')

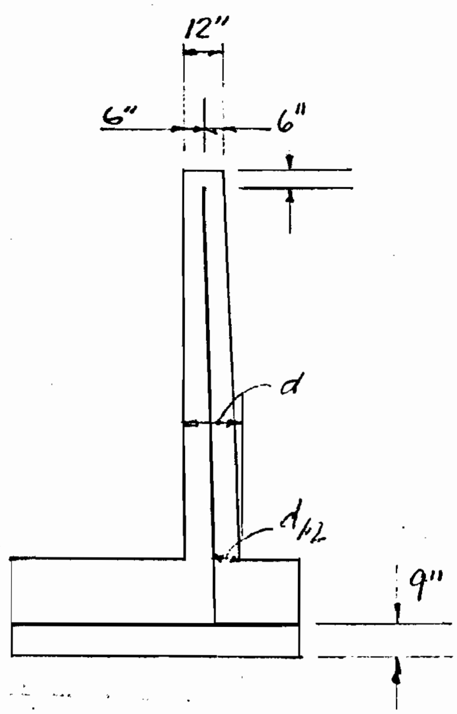
PROJECT	Page __ of __	COMPUTED BY	DATE
SUBJECT: ESTIMATE PRESTRESSED CONCRETE PILE - (0+40 to 3+79.71)		CHECKED BY	DATE

Length of 12"X12" Prestressed Concrete Piles.

MONOLITH	NO. PILES	PILE LENGTH	LENGTH
3	17	60	1020'
	8	60	480'
[illegible]	8	60	480'
6	20	60	1200'
7	18	60	1080'
8	19	60	1140'
		Total	= 5400'

(Use 5500')

Page __ of __	COMPUTED BY	DATE
F-Wall - Waterstops, 3-Bulb Type (0+40 to 31+19.72)	HMB	Mar. 77
	CHECKED BY	DATE



Typical, 3-Bulb Type Waterstop Detail

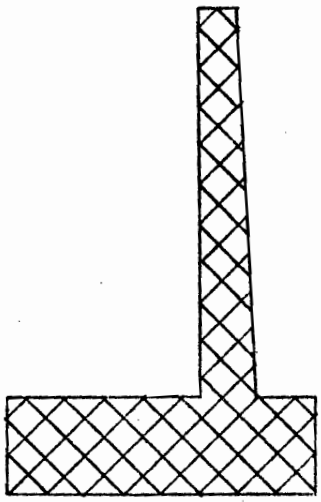
Length = 6(12 + 2.5 -0.75 + 8) = 130.5 Lf

(Use 140 Lf)

	Page — of —	COMPUTED BY HMB	DATE Mar. 77
Construction Joint Material (0+40 to 5+79.72)		CHECKED BY	DATE

Construction Joint Material

Typical Area



$$A = 5\left[(1/2)(12)\left(2+\frac{12}{24}\right) + 20\right] = 175 \text{ sf}$$

(Use 180 sf)

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex - West

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	Floodwalls, Levees, Gated Structure				
	Structure Excavation	2,300	CY	5.00	11,500.00
	Structure Backfill	2,870	CY	6.00	17,220.00
	Backfill Fertilization and seeding	1.34	acre	400	536.00
	Clearing and Grubbing	2.34	acre	500	1170.00
	Steel Sheet Piling, PMA-22	16,600	sf	8.00	132,800.00
	Steel Sheet Piling, PZ-27	1,530	sf	8.00	12,240.00
	12" X12" Prestressed Concrete Piling	15,820	lf	15.00	237,300.00
	Concrete in Stabilization Slab	80	CY	80.00	6,400.00
	Concrete in Base Slab	610	CY	80.00	48,800.00
	Concrete in Walls, Columns, Beams	410	CY	150.00	61,500.00
	Portland Cement	5700	cwt	2.50	14,250.00
	Steel Reinforcement	882,600	lb	0.35	308,910.00
	Bulb-type Waterstops	340	lf	5.00	1,700.00
	L-type Waterstops	35	lf	15.00	525.00
	Expansion Joint Filler	600	sf	1.50	900.00
	Structural Steel	46,000	lb	1.75	80,500.00
	Miscellaneous Metal	6600	lb	1.50	9,900.00
	Gate Seals	130	lf	20.00	2,600.00
	Overhead Trolleys	1	bb	500.00	500.00
	Sackrub Finish	16,600	sf	0.40	6,640.00
	Subtotal				955,891.00

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

CBS 7 Sept. 16

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex - West

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2.	Bypass Channel				
	Structure Excavation	2,700	CY	2.50	6,750.00
	Structure Backfill	4500	CY	3.50	15,750.00
	Steel Sheet Pile, PZ-32 (USS X-Ten 55)	48,600	sf	8.50	413,100.00
	Steel Sheet Pile Cover Plates	5,500	lb	0.75	4,125.00
	Wale Channels, C15 X40	1,434	ft	8.00	11,472.00
	Standard Pipe, 4" ϕ	6,045	lb	0.50	3,022.50
	Tie Rods, 3 1/4" ϕ	26,400	lb	0.75	19,800.00
	Steel H-Piles, HP14X73	3,234	ft	14.00	45,276.00
	Concrete in Deadmen	80	CY	60.00	4,800.00
	Steel Reinforcement	11037	lb	0.35	3862.95
	Pulling Steel Sheet Piling	48,600	sf	1.00	48,600.00
	Pulling H-Piling	3,234	ft	3.00	9,702.00
	Salvage Steel	1260	Ton	30.00	37,800.00
	Subtotal				624,060.45

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-252-453

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex - West

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
3	Cofferdam System				
	Structure Excavation	2,700	CY	3.00	8,100.00
	Structure Backfill (Shell)	4,550	CY	10.00	45,500.00
	Steel Sheet Pile, PZ-32	40350	SF	8.50	342,975.00
	Dewatering system	1	Job		50,000.00
	Subtotal				446,575.00

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O—251-433

REASONABLE [redacted] ESTIMATE					SHEET OF
PROJECT Florida Avenue Complex – West					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
4	Vertical Lift Gate Structure				
	Structure Excavation	3,250	CY	3.00	9750.00
	Structure Backfill	2,250	CY	4.00	9000.00
	Steel Sheet Piling, PMA-22	2,150	sf	8.00	17,200.00
	Concrete in Base Slab	300	CY	80.00	24,000.00
	Concrete in Walls (El -18.5 to +2)	251	CY	140.00	35,140.00
	Concrete in Deckslab	91	CY	180.00	16,380.00
	Concrete in Walls (El +2 to +27)	147	CY	140.00	20,580.00
	Concrete in Floodwalls	23	CY	140.00	3,220.00
	Concrete in Stairs	4	CY	200.00	800.00
	Concrete in Machine Room Slab	64	CY	80.00	5,120.00
	Concrete in Machine Room Walls	41	CY	140.00	5,740.00
	Concrete in Roof Slab	17	CY	200.00	3,400.00
	Portland Cement	4850	cwt	2.50	12,125.00
	Steel Reinforcement	181,700	lb	0.35	63,595.00
	14" x 14" Prestressed Concrete Piling	6,000	ef	16.00	96,000.00
	Structural Steel	72,600	lb	1.75	127,050.00
	Miscellaneous Metal	91,440	lb	1.50	137,160.00
	Sackrub Finish	5,750	sf	0.40	2,300.00
	Overhead Trolleys	4	Job	500.00	2,000.00
	Subtotal				590,560.00

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex - West

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
5	Approach Structures				
	Concrete in Stabilization Slab	52	CY	80.00	4,160.00
	Concrete in Base Slab	546	CY	80.00	43,680.00
	Concrete in Walls	260	CY	140.00	36,400.00
	Portland Cement	4,425	CWT	2.50	11,062.50
	14"x14" Prestressed Concrete Piles	3,424	lf	16.00	54,784.00
	Steel Reinforcement	627,100	lb	0.35	219,485.00
	Sackrub Finish	3,500	sf	0.40	1,400.00
	Expansion Joint Filler	700	sf	1.50	1,050.00
	Bulb-type Waterstops	190	lf	5.00	950.00
	L-type Waterstops	100	lf	20.00	2,000.00
	Subtotal				374,971.50

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Florida Avenue Complex-West				
1.	Floodwalls, Levees, Gated Structures				
2.	Bypass Channel				
3.	Cofferdam System				
4.	Vertical Lift Gate Structure				
5	Approach Structures				
	Subtotal				
	Florida Avenue Complex-East				
1.	Floodwalls, Levees, Gated Structures				
2.	Bypass Channels				
3.	Cofferdam System				
4.	Vertical Lift Gate Structure				
5	Approach Structures				
	Subtotal				

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

G/O : 1967 O—[illegible]

PROJECT	Floodwall Reaches, ~~East~~ West	Page 1 of —	COMPUTED BY	DATE
SUBJECT	Levees and Floodwalls		CHECKED BY	DATE

	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
	~~Compression pile test (12"x12")~~	~~2~~	~~Ea~~		
	~~Additional comp. pile test (14"x14")~~	~~2~~	~~Ea~~		
	~~Tension pile test~~	~~4~~	~~Ea~~		
	Steel sheet piling, PZ-27	1530	sf	8.00	12240
	Steel sheet piling, PMA-22	16610	sf	8.00	132800
	Steel sheet piling, PSA-22	3500	sf	8.00	28000
	Prestressed conc. piling, 12"x12"	15280	lf	15.00	237300
13	Concrete in stabilization slab	80	cy	80.00	6400
	Concrete in base slab	610	cy	80.00	48800
	Concrete in walls, columns, and beams	410	cy	150.00	61500
	Portland Cement	5700	c.wt	2.50	14250
	Steel reinforcement	882600	lbs.	0.35	308910
	Structural steel	46000	lbs.	1.75	80500
	Waterstops, L-type	35	lf	15.00	525
	Waterstops, S-Bulb type	340	lf	5.00	1700
	Gate seals	130	lf	20.00	2600
	Sack-rubbed finish	1600	sf	0.40	640
	Structural excavation	2200	cy	5.00	11000
	Structural Backfill	2870	cy	6.00	17220
	Expansion joint filler	600	sf	1.50	900
	~~Concrete removal~~	~~92~~	~~cy~~	~~50~~	
	Miscellaneous metal	660	job	1.50 per Section.	1110
	Trolleys, overhead roller gates	1	job	500.00	500
	Fertilizing and seeding	1.2	acre	400.00	480
	Clearing and grubbing	2.2	acre	500.00	1110
	Subtotal, Floodwall Reaches, East				

Enviromental protection ( )
Subtotal
Contingencies 25% ±
Subtotal

Engineering and design 10.8% ±
(based on estimated of actual
E & D required)

Supervision and administration 9.0% ±
(based on estimated of the actual
S & A on E & D required)

PROJECT	Floodwall Reaches, West	Page __ of __	COMPUTED BY	DATE
SUBJECT	. Relocations		CHECKED BY	DATE

	Item	Estimated Quantity	Units	Unit Price	Estimated Quantity
C2	Pipelines and Powerlines				
	Overhead power line 6" ϕ Water line thru T-Wall	2	~~Job~~ Ea	5000	10000
		1	Ea	1500	1500
	Overhead power line 5" ϕ power line thru T-Wall	1	Ea	5000	5000
		2	Ea	5600	11200
	54" ϕ sewer force main thru T-Wall	1	Ea	25000	25000
	48" ϕ water main thru T-Wall	1	Ea	21000	21000
	Subtotal				73700
	Miscellaneous structures				~~15000~~
	Railroad falsework	1	Job	L.S.	
	~~Modification to existing road ways~~ ~~S~~				
	Subtotal RELOCATIONS				

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex – ~~East~~ West			
SUBJECT		CHECKED BY	DATE
Relocations			

Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
Overhead telephone line	1	Ea	5000	5000
66"ϕ sewer force main, thru T-wall	1	Ea	30000	30000
Overhead power line	4	~~Ea~~	5000	20000
Power line in 5"ϕ pipe thru T-wall	3	Ea	5600	16800
Relocated 6"ϕ water main	1	Ea	1500	1500
Relocated 36"ϕ water main	1	Ea	16000	16000
Relocated 54"ϕ sewer force main	1	Ea	25000	25000
Relocated 8"ϕ gas line	1	Ea	2500	2500
Subtotal				116800
Miscellaneous Structures				
Railroad falsework	1	job		
Relocate power ~~substation~~ transformer	1	job		
Relocate power poles	1	job		
Relocate manhole	1	job		
~~Subtotal~~				
Subtotal, Relocations				
Contingencies 25%				
Engineering and design 10.8%± (based on estimate of actual E;D required)				
Supervision and administration %± (based on estimate of actual S;A on E;D required)				
Total, Relocations for Floodwall Reaches				
Total, Floodwall Reaches				

PROJECT		COMPUTED BY	DATE
Florida Avenue Complex - [redacted] West Page __ of __			
SUBJECT		CHECKED BY	DATE
Vertical Lift Gate Structure			

Item	Estimated Quantity	Units	Unit Price	Estimated Amount
Steel sheet piling PMA-22	2150	sf	8.00	17200
Prestressed conc. piling, 14"x14"	6000	lf	16.00	96000
Concrete in base slab (Concrete in Stab. Slab)	300 25	cy	80.00 80.00	2000 24000
Concrete in wall (El. -18.5 to +2)	251	cy	140.00	35140
Concrete in deck slab	91	cy	180.00	16380
Concrete in wall (El. +2 to +27)	147	cy	140.00	20580
Concrete in floodwalls	23	cy	140.00	3220
Concrete in stairs	4	cy	200.00	800
Concrete in machine room slab	64	cy	80.00	5120.
Concrete in machine room walls	41	cy	140.00	5740.
Concrete in roof slab	17	cy	200.00	3400
Portland cement	4850	cwt	2.50	12125
Steel reinforcement	181700	lbs	0.35	63595
Structural steel	72600	lbs.	1.75	127050
Sack-rubbed finish	5750	s.f.	0.40	2300
Structural excavation	[redacted] 5250 2250	cy	3.00	[redacted]
Structural backfill	[redacted]	cy	4.00	[redacted]
Miscellaneous metal	91440	lbs.	1.50	137160
Trolleys, overhead roller gate	4	Ea	500.00	2000
Machinery assembly electrical	2	Ea	13350	26700
Subtotal				[redacted] 617260

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex - East			
SUBJECT		CHECKED BY	DATE
Vertical Lift Gate Structure - Approach Structures			

Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
Prestressed conc. piling, 14"x14"	~~3424~~	lf	16.00	~~54784~~
Concrete in stabilization slab	~~52~~	cy	80.00	~~4160~~
Concrete in base slab	~~546~~	cy	80.00	~~43680~~
Concrete in walls	~~260~~	cy	140.00	~~36400~~
Portland cement	~~4425~~	cwt	2.50	~~11063~~
Steel Reinforcement	~~627100~~	lbs	0.35	~~219485~~
Waterstops, L-type	~~100~~	lf	20.00	~~2000~~
Waterstops, 3-Bulb type	~~190~~	lf	5.00	~~950~~
Sack-rubbed finish	~~3500~~	sf	0.40	~~1400~~
Expansion joint filler	~~700~~	sf	1.50	~~1050~~
Subtotal				~~374972~~
Cofferdam System				
Steel sheet piling, ~~PZ-32~~ PS-32	~~40350~~	sf	8.50	~~342975~~
Structure excavation	~~3700~~	cy	3.00	~~8100~~
Structure backfill	~~4552~~	cy	10.00	~~45500~~
Dewatering system	1	job	50000	50000
Subtotal				446575

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex - East			
SUBJECT		CHECKED BY	DATE
Vertical Lift Gate Structure - Bypass Channel			

Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
Steel sheet piling, PZ-32 (USS x-Ten 55)	48600	sf	8.50	413100
Steel sheetpiling cover plates	5500	lbs.	0.75	4125
Wale channels, C15x40	1434	lf	8.00	11472
Standard pipe, 4"ϕ	6045	lbs.	0.50	3023
Tie rods, 3¼"ϕ	26400	lbs.	0.75	19800
Steel H-piling, HPx73	3234	lf	14.00	45276
Pulling steel sheet piling	48600	sf	1.00	48600
Pulling steel H-piling	3234	lf	3.00	9702
Concrete in deadman	80	cy	60.00	4800
Steel reinforcement	11037	lbs.	0.35	3863
Structure excavation	~~2400~~ 2700	cy	2.50	~~7000~~ 6750
Structure backfill	~~3000~~ 4500	cy	3.50	~~10500~~ 15750
Salvage steel	1260	Ton	30.00	-(37800)
Subtotal				~~541461~~ 548461
Subtotal, Vertical Lift Gate Structure and adjoining Structures				1,987,268
Enviromental protection (0.005)				19,873
Subtotal				2,007,141
Contingencies 25% ±				501,786
Subtotal				2,508,927
Engineering and design 10.3 % ± (based on estimate of actual E/D required)				258,423
Supervision and administration (based on estimate of the actual E/D required)	% ±			25,804
Total, Construction for Vertical Lift Gate Structure and adjoining structures				3,005,696

Approach Structures - West

Bulb-type Waterstops,

$L_1 = 45' + 1' + 1' + 1.75' + 1.75' + 20.5' + 20.5'$

$= 91.5$ lf (2 structures)

Total Length = 183 lf (Use 190 lf)

L-type Waterstops,

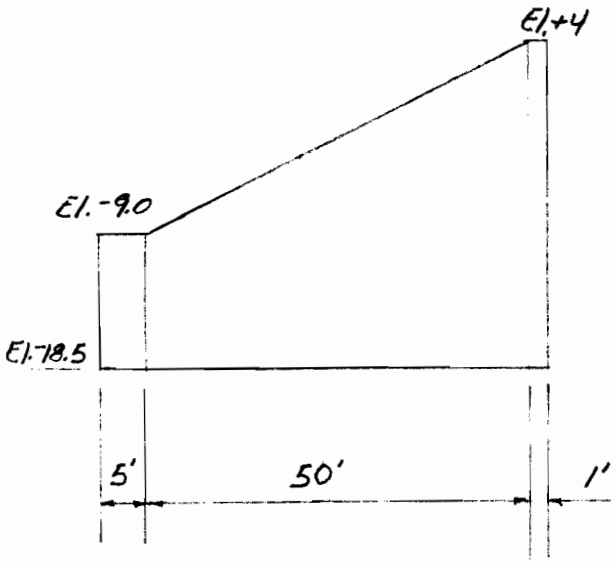
$L_2 = 26' + 1 + (1.5 + 9.5)2$

$= 49$ lf (2 structures)

Total Length = 98 lf (Use 100 lf)

PROJECT	Page ___ of ___	COMPUTED BY	DATE
SUBJECT		CHECKED BY	DATE

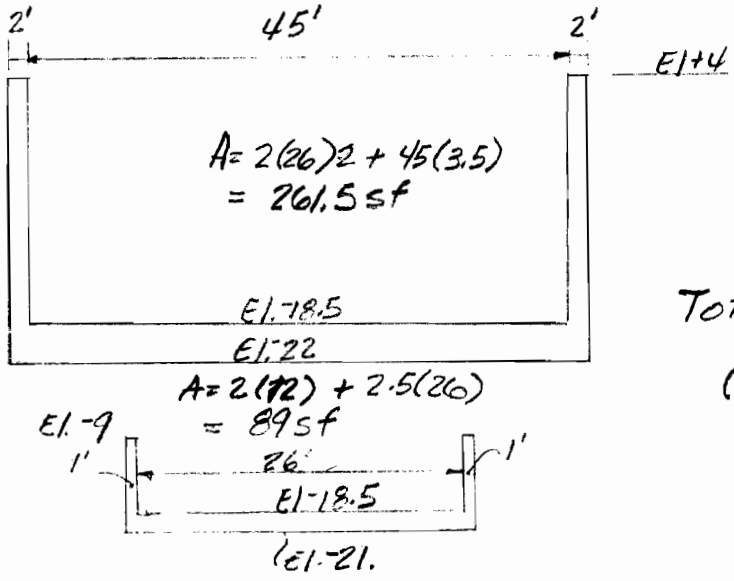
Sackrub Finish –
Approach Structures – West 1HNC



$A = (1' \times 22.5') +$
$\frac{1}{2}(22.5' + 9.5')(50') +$
$(9.5' \times 5')$
$= 870\ sf$

Total Area = $4 \times 870\ sf$
$= 3480\ sf$
(Use 3500 sf)

Expansion Joint Filler – (2 structures)



Total A = 701 sf
(Use 700 sf)

PROJECT	Page __ of __	COMPUTED BY	DATE
SUBJECT		CHECKED BY	DATE

Jackrub Finish

W/L sta. -0+11.03 to W/L sta 0+40,

A = 51.03' x 1' x 2 = 612.36 sf

W/L sta. 0+40 to W/L sta 3+71,

A = 333' x 12' x 2 = 7992 sf

Swing Gates,

Wall Area = 10.75' x 10' x 2 = 215 sf

Column Area = 2(7.8)(8) + 14.2(8) + 17(8)

= 379.2 sf

W/L sta 4+36.46 to W/L sta 5+55.46,

A = 10' x 119' x 2 = 2380 sf

W/L sta 5+55.46 to W/L sta. 6+02.71,

A = 47.25 x 13' x 2 = 1228.5 sf

W/L sta 6+63.21 to W/L sta 6+97.5

A = 34.29' x 13 x 2 = 735.54 sf

PROJECT	Page — of —	COMPUTED BY	DATE
SUBJECT		CHECKED BY	DATE

Sackrub Finish (Vertical Surface)

El. 4 to El. 10 =

$A_2 (36' \times 66.5' \times 2) + (36' \times 13' \times 2)$

$= 5724$ sf

(Use 5750 sf)

PROJECT	Page — of —	COMPUTED BY	DATE
SUBJECT		CHECKED BY	DATE

3625.65

Overhead Roller Gate

Wall Area = 40' x 12' x 2 = 960 sf

Column Area = 31' x 22.75' = 705.25 sf

Beam Area = 2.5' x 4 x 78' = 780 sf

W/L sta. 7+84.5 to W/L sta. 8+09.50,

A = 25' x 10' x 2 = 500 sf

W/L sta 7+09.5 to W/L sta 8+33.7,

A = 24.2' x 6' x 2 = 290.4 sf

Total Area = 16563.25 sf

(Use 16600 sf)

PROJECT Fla Ave Complex	Page __ of __	COMPUTED BY	DATE
SUBJECT		CHECKED BY	DATE

1. Label all Computations.

9Sep76 2. Summary table for pile loads for T-Walls, JGI Gates

20Aug763. Reinforcement/Jt Matl for West T-Wall

23Aug764. Check T-Wall comps (Est.) Rebar

16Aug765. (16 Aug 76) — East: Fla Ave. Gate —
1. relocate rd
2. give South side larger shoulder
3. Redo Mono 8, 6

1Sep 76 6. Estimate VLG Excav (/Fill), cofferdam syst., Bypass channel
(Joe Cali - F+M)

19Aug767. Estimate Ultilities (to Est/Spec)

30Aug768. ROW/const Easement (to Real Estate) 16B

19Aug769. Bypass Channel (to Hugh Howat)

20Aug7610. [redacted] Check pile tip Elev

23Aug7611. Check sheet pile tip Elev - West

12. Check sheet pile tip Elev - East (Cali') *

13. Write-up. —

1. called 23Aug76 haven't done have changed

PROJECT	Page 1 of —	COMPUTED BY	DATE
Floodwall Reaches, East			
SUBJECT		CHECKED BY	DATE
Levees and Floodwalls			

Item	Estimated Quantity	Unit	Unit Price	Estmated Amount
Compression pile test (12"x12")	2	Ea		
Additional comp. pile test (14"x14")	2	Ea		
Tension pile test	4	Ea		
Steel sheet piling, PZ-27	9450	sf	8.00	75600
Steel sheet piling, PMA-22	9100	sf	8.00	72800
Steel sheet piling, PSA-22	500	sf		4000
Prestressed conc. piling, 12"x12"	14500	lf	15.00	217500
13 Concrete in stabilization slab	70	cy	80.00	5600
Concrete in base slab	540	cy	80.00	43200
Concrete in walls, columns, and beams	285	cy	150.00	42750
Portland Cement	4580	c.wt	2.50	11450
Steel reinforcement	389200	lbs.	0.35	136220
Structural steel	32500	lbs.	1.75	56875
Waterstops, L-type	45	lf	15.00	675
Waterstops, S-Bulb type	390	lf	5.00	1950
Gate seals	100	lf	20.00	2000
Sack-rubbed finish	18950	sf	0.40	7580
Structural excavation	1480	cy	5.00	7400
Structural Backfill	1600	cy	6.00	9600
Expansion joint filler	825	sf	1.50	1240
Miscellaneous metal	1600	job	1.50	2400
Trolleys, overhead roller gates	1	job	500.00	500
Fertilizing and seeding	1.73	acre	400.00	692
Clearing and grubbing	2.71	acre	500.00	1355
Subtotal, Floodwall Reaches, East				

Enviromental protection ( )
Subtotal
Contingencies 25% ±
Subtotal

Engineering and design 10.8% ±
(based on estimate of actual
E & D required)

Supervision and administration 9.0% ±
(based on estimate of the actual
S & A on E & D required)

PROJECT	Florida Avenue Complex – East	Page — of —	COMPUTED BY	DATE
SUBJECT	Relocations		CHECKED BY	DATE

Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
Overhead telephone line	1	Ea	5000	5000
66"ϕ sewer force main, thru T-wall	1	Ea	30000	30000
Overhead power line	4	Ea	5000	20000
Power line in 5"ϕ pipe thru T-Wall	3	Ea	5600	16800
Relocated 6"ϕ water main	1	Ea	1500	1500
Relocated 36"ϕ water main	1	Ea	16000	16000
Relocated 54"ϕ sewer force main	1	Ea	25000	25000
Relocated 8"ϕ gas line	1	Ea	2500	2500
Subtotal				116800
Miscellaneous Structures				
Railroad falsework	1	job		
Relocate power ~~substation~~ transformer	1	job		
Relocate power poles	1	job		
Relocate manhole	1	job		
Subtotal				
Subtotal, Relocations				
Contingencies 25%±				
Engineering and design 10.8%± (based on estimate of actual E;D required)				
Supervision and administration %± (based on estimate of actual S;A on E;D required)				
Total, Relocations for Floodwall Reaches				
Total, Floodwall Reaches				

PROJECT	Florida Avenue Complex - East	Page __ of __	COMPUTED BY	DATE
SUBJECT	Vertical Lift Gate Structure		CHECKED BY	DATE

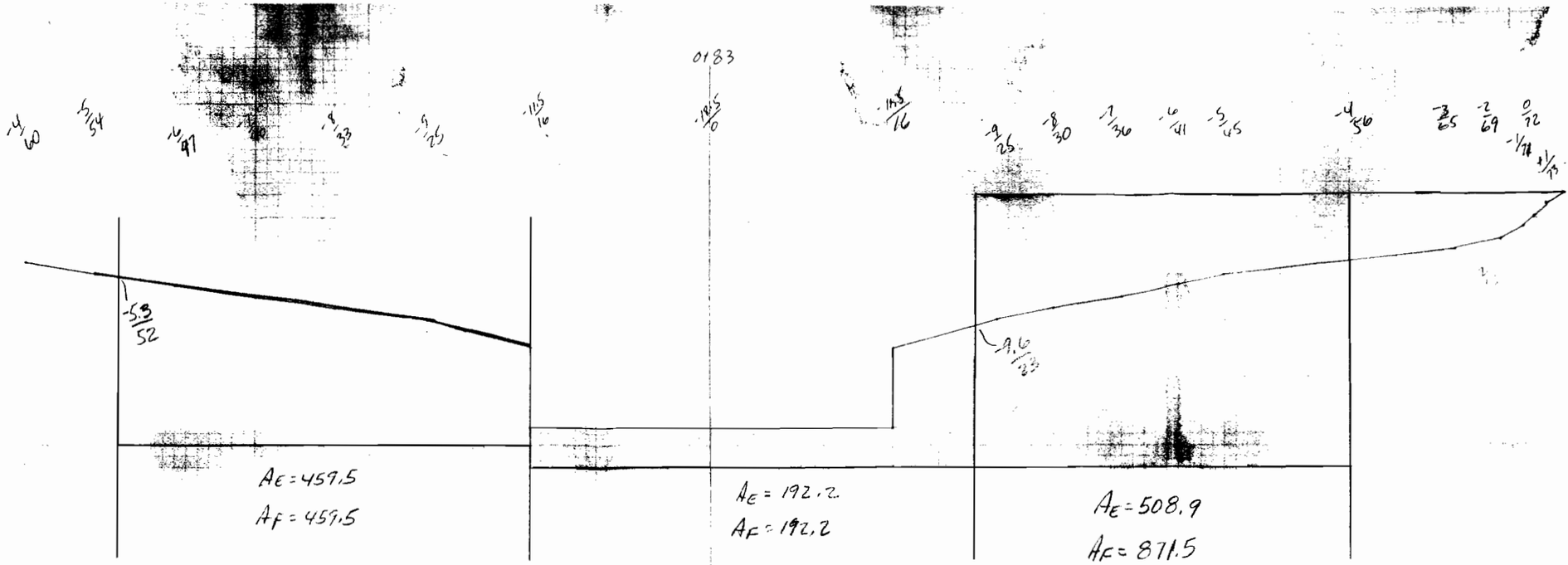
Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
Steel sheet piling PMA-22	2150	sf	8.00	17200
Prestressed conc. piling, 14"x14"	6000	lf	16.00	96000
Concrete in base slab	300	cy	80.00	24000
Concrete in wall (El. -18.5 to +2)	251	cy	140.00	35140
Concrete in deck slab	91	cy	180.00	16380
Concrete in wall (El. +2 to +27)	147	cy	140.00	20580
Concrete in floodwalls	23	cy	140.00	3220
Concrete in stairs	4	cy	200.00	800
Concrete in machine room slab	64	cy	80.00	5120.
Concrete in machine room walls	41	cy	140.00	5740.
Concrete in roof slab	17	cy	200.00	3400
Portland cement	4850	cwt	2.50	12125
Steel reinforcement	181700	lbs	0.35	63595
Structural steel	72600	lbs.	1.75	127050
Sack-rubbed finish	5750	s.f.	0.40	2300
Structural excavation	3300	cy	3.00	9900
Structural backfill	2700	cy	4.00	10800
Miscellaneous metal	91440	lbs.	1.50	137160
Trolleys, overhead roller gate	4	Ea	500.00	2000
Machinery assembly	2	Ea	13350	26700
Subtotal				619210

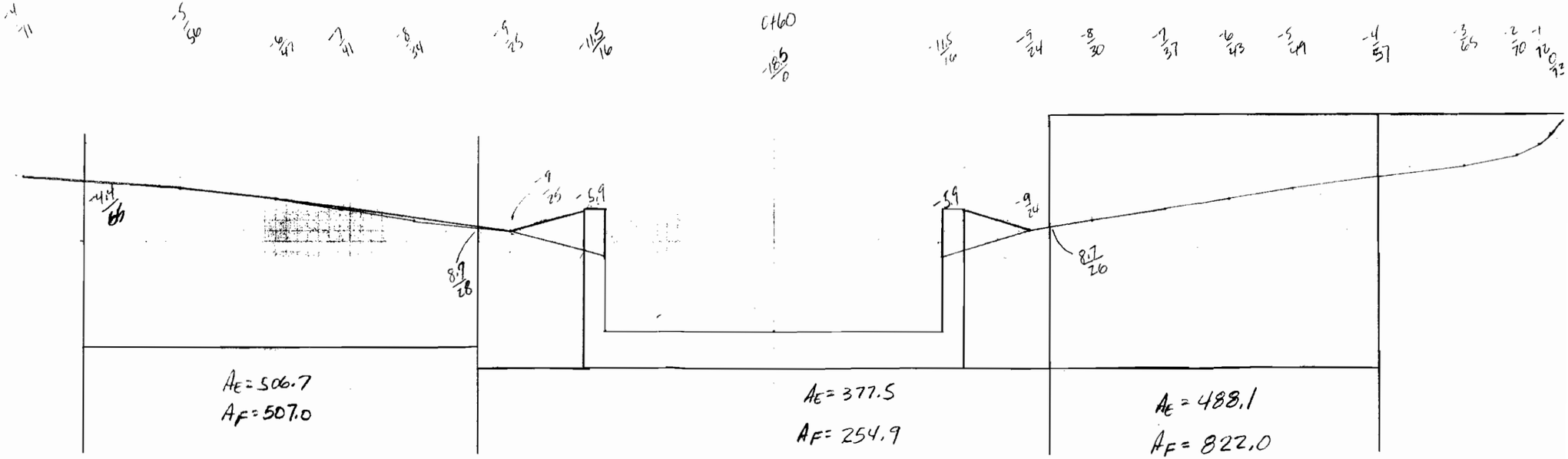
PROJECT	Florida Avenue Complex - East	Page — of —	COMPUTED BY	DATE
SUBJECT	Vertical Lift Gate Structure - Approach Structures		CHECKED BY	DATE

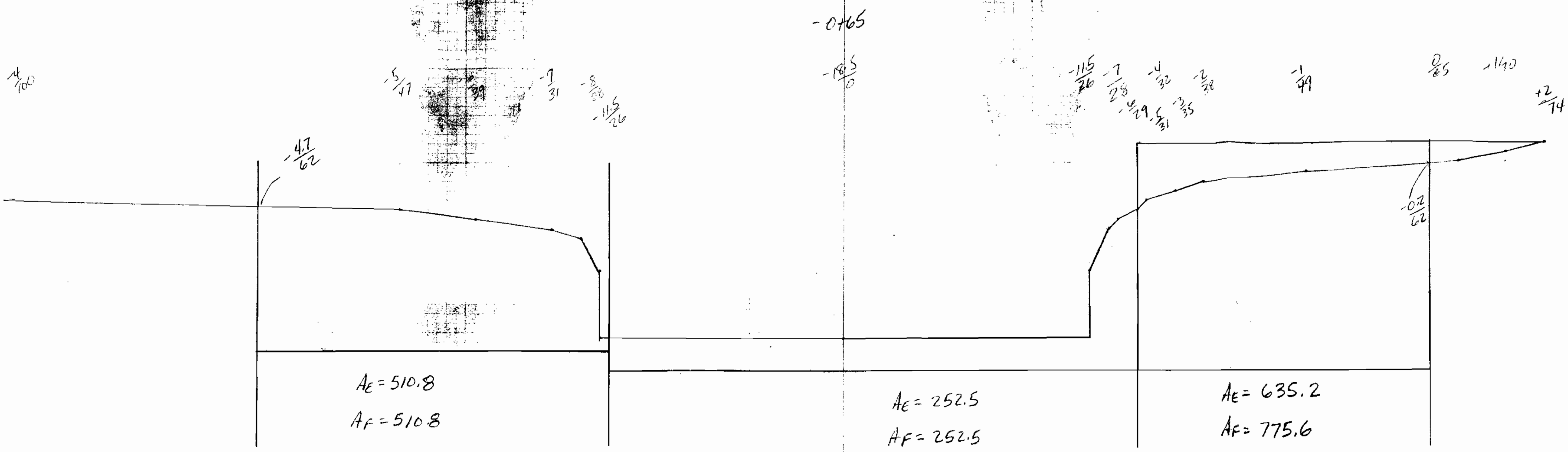
Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
Prestressed conc. piling, 14"x14"	2600	lf	16.00	41600
Concrete in stabilization slab	85	cy	80.00	6800
Concrete in base slab	845	cy	80.00	67600
Concrete in walls	215	cy	140.00	30100
Portland cement	5880	cwt	2.50	14700
Steel Reinforcement	106200	lbs	0.35	37170
Waterstops, L-type	130	lf	20.00	2600
Waterstops, 3-Bulb type	200	lf	5.00	1000
Sack-rubbed finish	2950	sf	0.40	1180
Expansion joint filler	775	sf	1.50	1165
Subtotal				203915
Cofferdam System				
Steel sheet piling, PZ-32	46650	sf	8.50	396525
Structure excavation	3100	cy	3.00	9300
Structure backfill	4350	cy	10.00	43500
Dewatering system	1	job	50000	50000
Subtotal				499325

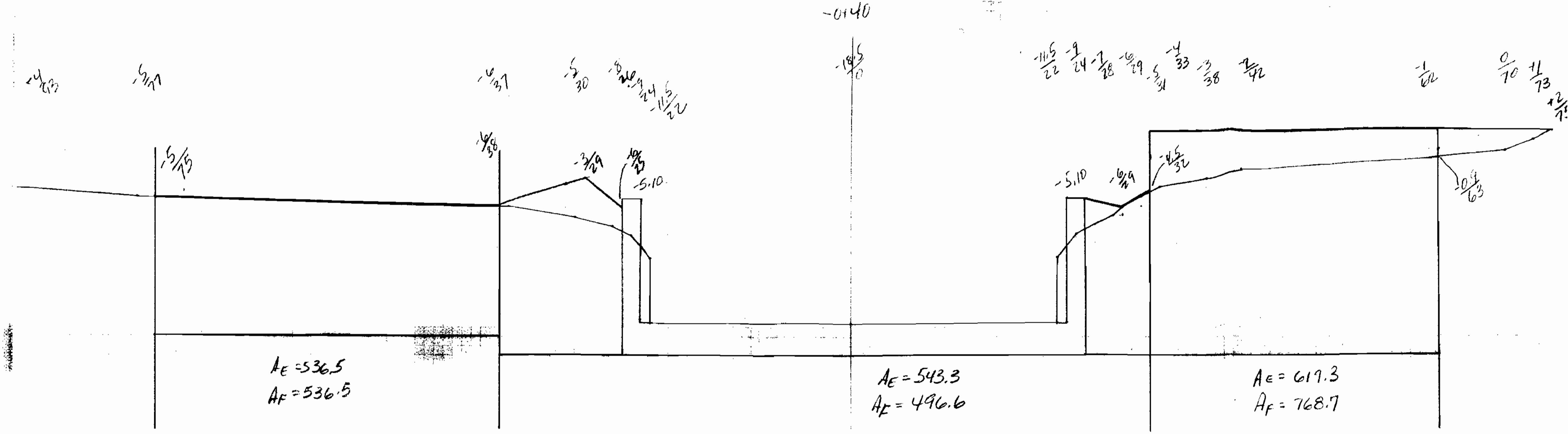
PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex - East			
SUBJECT		CHECKED BY	DATE
Vertical Lift Gate Structure - Bypass Channel			

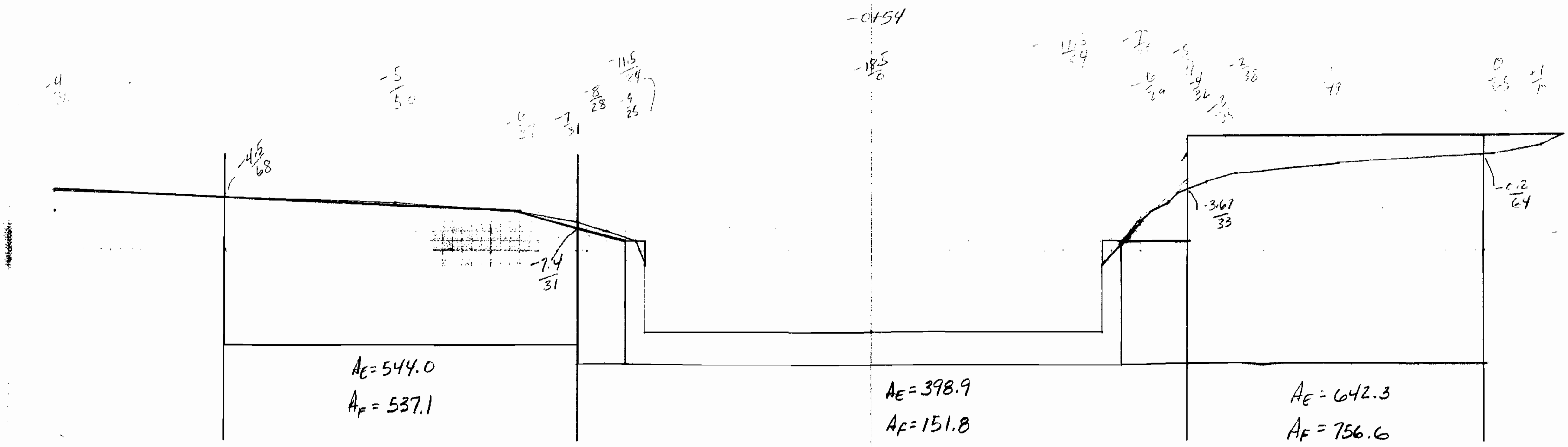
Item	Estimated Quantity	Unit	Unit Price	Estimated Amount
Steel sheet piling, PZ-32 (USS x-Ten 55)	48600	sf	8.50	413100
Steel sheetpiling cover plates	5500	lbs.	0.75	4125
Wale channels, C15x40	1434	lf	8.00	11472
Standard pipe, 4"ϕ	6045	lbs.	0.50	3023
Tie rods, 3¼"ϕ	26400	lbs.	0.75	19800
Steel H-piling, HPX73	3234	lf	14.00	45276
Pulling steel sheet piling	48600	sf	1.00	48600
Pulling steel H-piling	3234	lf	3.00	9702
Concrete in deadman	80	cy	60.00	4800
Steel reinforcement	11037	lbs.	0.35	3863
Structure excavation	2800	cy	2.50	7000
Structure backfill	3000	cy	3.50	10500
Salvage steel	1260	Ton	30.00	-(37800)
Subtotal				543461
Subtotal, Vertical Lift Gate Structure and adjoining Structures				1,865,911
Enviromental protection (0.005)				9330
Subtotal				1,875,241
Contingencies 25% ±				468,811
Subtotal				2,344,052
Engineering and design, estimate of actual	10.8% ± (based on E/D required)			253,158
Supervision and administration (based on estimate of the actual E/D required)	9 %±			210,965
Total, Construction for Vertical Lift Gate Structure and adjoining structures				2,808,175

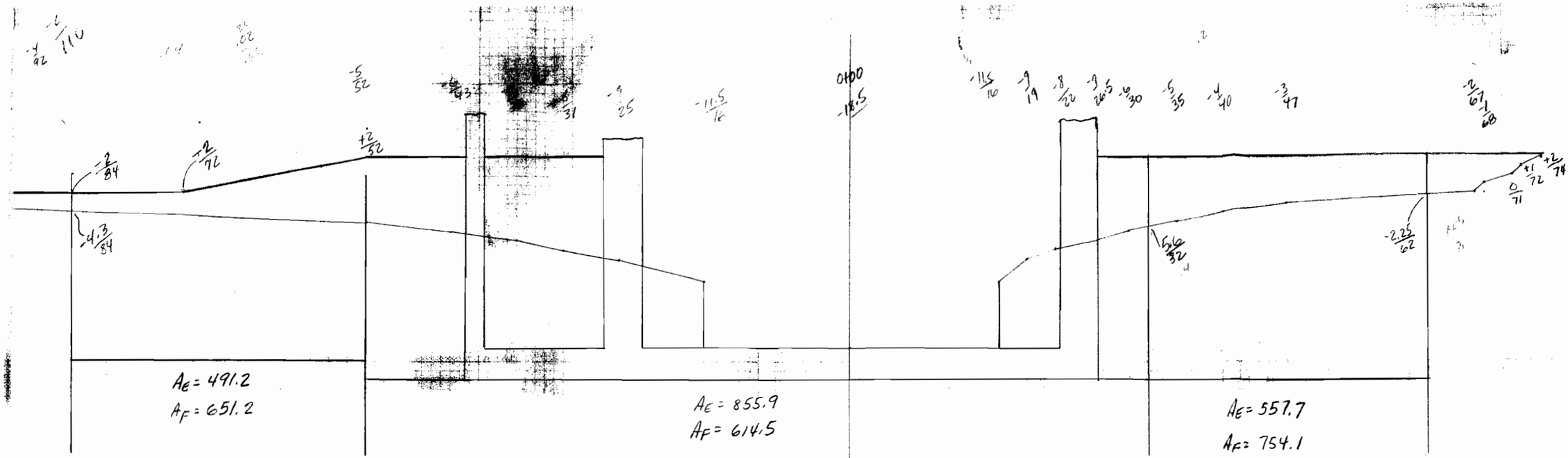

01+83
-4/60
-5/54
-6/47
-8/33
-9/25
-11.5/16
-11.5/16
-9/25
-8/30
-7/36
-6/41
-5/45
-4/56
-3/65
-2/69
0/72
-1/71
+1/73
-5.9/52
-9.6/23
AE = 459.5
AF = 459.5
AE = 192.2
AF = 192.2
AE = 508.9
AF = 871.5

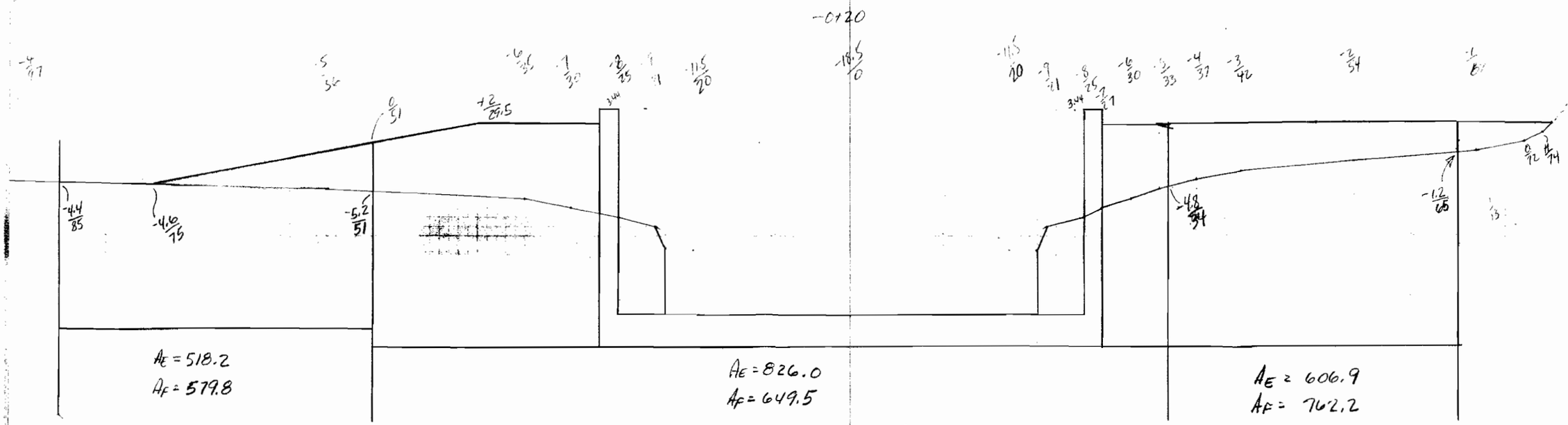

0+60
-4/11
-5/50
-6/47
-7/41
-8/34
-9/25
-11.5/16
-18.5/0
-11.5/16
-9/24
-8/30
-7/37
-6/43
-5/49
-4/57
-3/65
-2/70
-1/72
0/73
-4.4/66
-9/25
-5.9
8.9/28
-5.9
-9/24
8.7/26
AE = 506.7
AF = 507.0
AE = 377.5
AF = 254.9
AE = 488.1
AF = 822.0

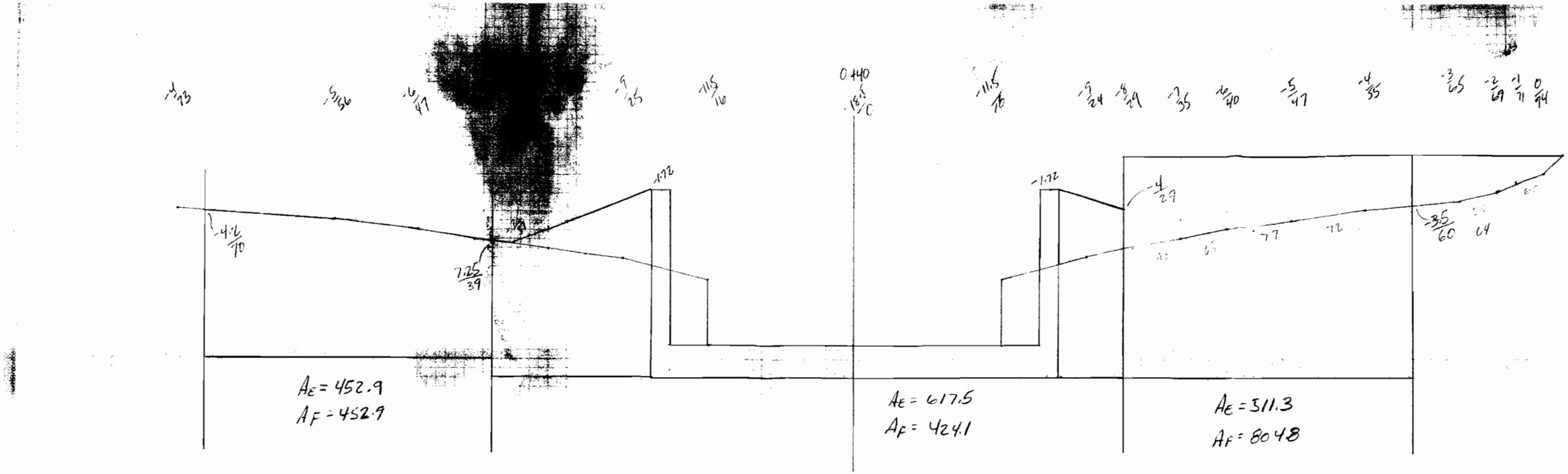

0+65
AE = 510.8
AF = 510.8
AE = 252.5
AF = 252.5
AE = 635.2
AF = 775.6

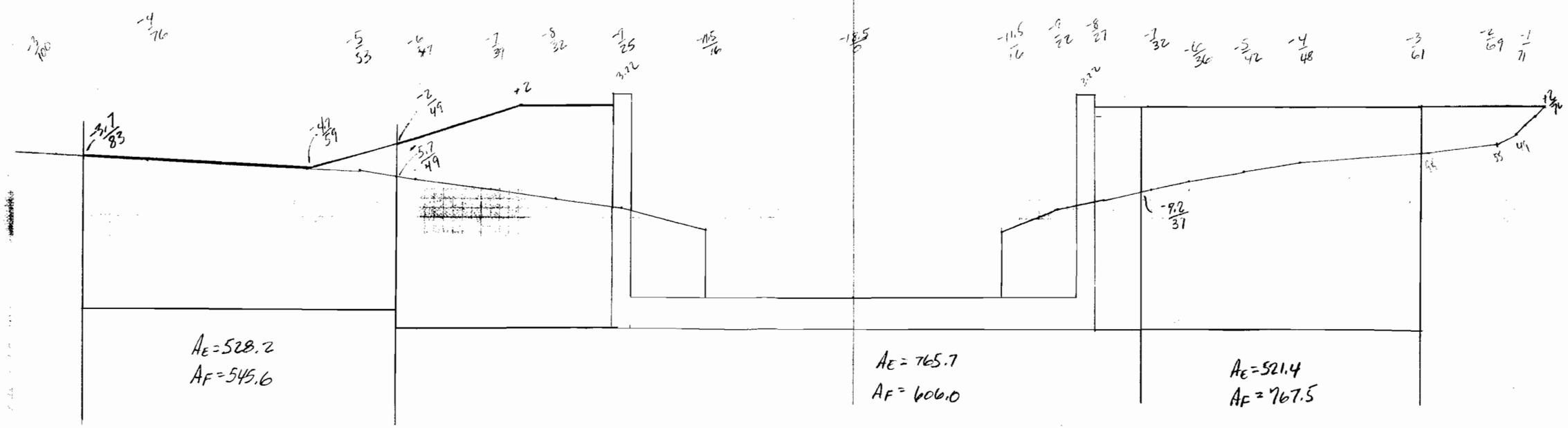

-0+40
AE = 536.5
AF = 536.5
AE = 543.3
AF = 496.6
AE = 617.3
AF = 768.7


-0+54
AE = 544.0
AF = 537.1
AE = 398.9
AF = 151.8
AE = 642.3
AF = 756.6


0+00
-18.5
$A_E = 491.2$
$A_F = 651.2$
$A_E = 855.9$
$A_F = 614.5$
$A_E = 557.7$
$A_F = 754.1$


-0+20
-18.5
0
$A_E = 518.2$
$A_F = 579.8$
$A_E = 826.0$
$A_F = 649.5$
$A_E = 606.9$
$A_F = 762.2$


0+40
$A_E = 452.9$
$A_F = 452.9$
$A_E = 617.5$
$A_F = 424.1$
$A_E = 311.3$
$A_F = 804.8$


0+20
$A_E = 528.2$
$A_F = 545.6$
$A_E = 765.7$
$A_F = 606.0$
$A_E = 521.4$
$A_F = 767.5$

REASONABLE [redacted] ESTIMATE | SHEET OF

PROJECT Florida Avenue Complex – East | INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	Floodwalls, Levees, Gated Structures				
	Structure Excavation	1480	CY	5.00	7400.00
	Structure Backfill	1600	CY	6.00	9600.00
	Backfill Fertilization and Seeding	1.73	acre	400	692.00
	Clearing and Grubbing	2.71	acre	500	1355.00
	Steel Sheet Piling, PMA-22	9100	s.f.	8.00	72,800.00
	Steel Sheet Piling, PZ-27	9450	sf.	8.00	75600.00
	12"X12" Prestressed Concrete Piling	14500	l.f.	15.00	217,500.00
	Concrete in Stabilization Slab	70	CY	80.00	5600.00
	Concrete in Base Slab	540	CY	80.00	43200.00
	Concrete in Walls, Columns, Beams	285	CY	150.00	42750.00
	Portland Cement	4580	cwt	2.50	11450.00
	Steel Reinforcement	389200	lbs.	0.35	136220.00
	Bulb-Type Waterstops	390	l.f.	5.00	1950.00
	L-Type Waterstops	45	l.f.	15.00	675.00
	Expansion Joint Filler	825	sf.	1.50	1237.50
	Structural Steel	32500	lbs.	1.75	56,875.00
	Miscellaneous Metal	1600	lbs.	1.50	2400.00
	Gate Seals-J-Type	100	lf	20.00	2000.00
	Overhead Trolleys	1	L.S.	500.00	500.00
	Sackrub finish	18950	sf	0.40	7580.00
	Subtotal				$ 699,384.50

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

CBS 7 Sht 2

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT: *Florida Avenue Complex - East*

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
2.	Bypass Channel				
	Structure Excavation	2800	CY	2.50	7000.00
	Structure Backfill	3000	CY	3.50	10500.00
	Steel Sheet Pile, PZ-32 (USS X-Ten 55)	48600	sf	8.50	413100.00
	Steel Sheet Pile Cover Plates	5500	lb	0.75	4125.00
	Wale Channels, C15 X 40	1434	ft	8.00	11472.00
	Standard Pipe, 4" ϕ	6045	lb	0.50	3022.50
	Tie Rods, 3/4" ϕ	26400	lb	0.75	19800.00
	Steel H-Piles, HP14X73	3234	ft	14.00	45276.00
	Concrete in Deadmen	80	CY	60.00	4800.00
	Steel Reinforcement	11037	lb	0.35	3862.95
	Pulling Steel Sheet Piling	48600	sf	1.00	48600.00
	Pulling H-Piling	3234	ft	3.00	9702.00
	Salvage Steel	1260	Ton	30.00	37800.00
	Subtotal				619060.45

GPO : 1967 OF—242-153

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex - East

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
3	Cofferdam System				
	Structure Excavation	3100	CY	3.00	9300.00
	Structure Backfill (Shell)	4350	CY	10.00	43500.00
	Steel Sheet Pile, PZ-32	46650	SF	8.50	396,525.00
	Dewatering System	1	Job		50,000.00
	Subtotal				499,325.00

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-244-433

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex — East

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
4	Vertical Lift Gate Structure				
	Structure Excavation	3300	CY	3.00	9900.00
	Structure Backfill	2700	CY	4.00	10,800.00
	Steel Sheet Piling, PMA-22	2,150	SF	8.00	17,200.00
	Concrete in Base Slab	300	CY	80.00	24,000.00
	Concrete in Walls (El -18.5 to +2)	251	CY	140.00	35,140.00
	Concrete in Deck Slab	91	CY	180.00	16,380.00
	Concrete in Walls (El +2 to +27)	147	CY	140.00	20,580.00
	Concrete in Floodwalls	23	CY	140.00	3220.00
	Concrete in Stairs	4	CY	200.00	800.00
	Concrete in Machine Room Slab	64	CY	80.00	5120.00
	Concrete in Machine Room Walls	41	CY	140.00	5740.00
	Concrete in Roof Slab	17	CY	200.00	3400.00
	Portland Cement	4850	CWT	2.50	12,125.00
	Steel Reinforcement	181,700	lb	0.35	63,595.00
	14" x 14" Prestressed Concrete Piling	6,000	LF	16.00	96,000.00
	Structural Steel	72,600	lb	1.75	127,050.00
	Miscellaneous Metal	91,440	lb	1.50	137,160.00
	Sackrub Finish	5,750	SF	0.40	2300.00
	Overhead Trolleys	4	Ea	500.00	2000.00
	Subtotal				595,165.00

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O—242-433

REASONABLE [redacted] ESTIMATE

SHEET OF

PROJECT: Florida Avenue Complex - East

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
5	Approach Structures				
	Concrete in Stabilization Slab	85	CY	80.00	6800.00
	Concrete in Base Slab	845	CY	80.00	67600.00
	Concrete in Walls	215	CY	140.00	30,100.00
	Portland Cement	5880	CWT	2.50	14,700.00
	14"x14" Prestressed Concrete Piles	2600	LF	16.00	41,600.00
	Steel Reinforcement	106200	lb	0.35	37,170.00
	Sackrub Finish	2950	SF	0.40	1180.00
	Expansion Joint Filler	775	SF	0.50	1162.50
	Bulb-type Waterstops	200	LF	5.00	1000.00
	L-type Waterstops	130	LF	20.00	2600.00
	Subtotal				203,912.50

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O—241-413

Florida Avenue Complex
For 1 – Machinery Assembly

Price List (operating Machinery)

1.	Magnetic Shoe Brake	$ 400.00
2 –	Electric Motor 10HP	450.00
3 –	Load Brake	1400.00
4 –	Speed Reducer	5000.00
5 –	Drum	2500.00
6 –	Wire Rope	250.00
7 –	Couplings	950.00
8 –	Bearings & Shafting	550.00
9 –	Pulleys	800.00
10 –	Air Cylinders and bearings	600.00
11 –	Air Compressor Unit	450.00
		$ 13,350.00
	25% Contingencies	3,338.00
	Total Cost – excluding labor for installation	$ 16,688.00

prices do not include labor

100% Labor

~~REASONABLE CONTRACT~~ ESTIMATE

SHEET OF

PROJECT I-Wall, -West

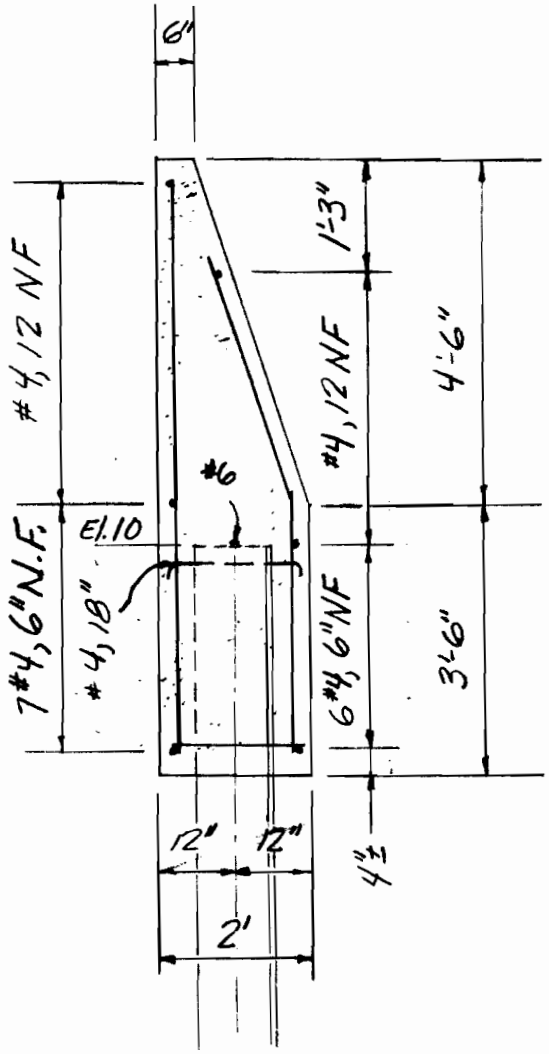
INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete	32	CY		
	Reinforcement	950	lb		
	~~Sheet Piling PZ-27~~	~~1530~~	~~sf~~		
	Cement	160	cwt		
	Waterstops, L-Type	35	lf		
	Expansion Joint Matl.	70	sf		
	Waterstops, 3" Bulb type	9	lf		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-252-663

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex - West	Page __ of __		RJGr	9 Aug 76
SUBJECT			CHECKED BY	DATE
I-Wall				



Length = 64'-2"
~ 5 joints, 3 transitions from I-Wall to T-Wall ~

Concrete ~

Volume = $[0.5(4.5) + \frac{1}{2}(1.5)(4.5) + 3.5(2)]60.2$
= $(13.75\ sf)60.2$
= $827.8\ cf = 30.66\ cy$
(Use 32 cy)

Cement ~

Volume $\times$ $5.17 \frac{cwt}{cy}$ =

= 158.5 cwt (Use 160 cwt)

Reinforcement ~

$(3 + 6 + 7 + 3)(60.2)(.668) + 1.5(60.2)(0.668)$

No. bars/ft x Length x Wt/ft

$+ \frac{2}{3}(60.2)(0.668) + 60.2(1.502) = 941.6$ lb

(Use 950 lb.)

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex - West	Page — of —		RJGr	9 Aug 76
SUBJECT			CHECKED BY	DATE
I-Wall - Sheet Piling, Waterstops				

Steel Sheet Piling ~

W/L sta 0+00 to sta 0+40 —

40 X 20' = 800 sf

W/L sta 8+09.5 to sta 8+33.7 —

24.2 X 30 = 726 sf , Total = 1526 sf

(Use 1530 sf)

Waterstops, L-type ~

W/L sta 0+00 to sta 0+40 —

El. 15 to El. 6 (sta. 0+00) = 9'

El. 15 to El. 0.5 (sta 0+40) = 14.5'

W/L sta 8+09.5 to sta 8+33.7 —

El. 15 to El. 7 (sta 8+09.5) = 8.'

Total = 31.5' (Use 35')

Waterstops, 3-bulb type ~

W/L sta 0+00 to sta 0+40 —

El. 14.5 to El. 7.25 (sta. 0+20) = 7.25'

Total = 7.25' (use 9')

PROJECT	Florida Avenue Complex - West	Page — of —	COMPUTED BY RJ Jr	DATE 9 Aug 76
SUBJECT	I-Wall - Expansion joint Material		CHECKED BY	DATE

Expansion joint material -

(13.75 sf) 5 = 68.75 sq ft (Use 70 sf)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 15Sep 76
SUBJECT	Steel Sheet Piling - East		CHECKED BY	DATE

Steel Sheet Piling - East

Station	Tip Elevation (Existing)	Top Elevation	Area
0+00 - 0+60 (PZ-27)		—	—
0+60 - 1+40.35	-25	+2.25	1788
1+40.35 - 2+62.5	-25	-1.50	2871
2+62.5 - 4+73.81	-25	-4.75	4279
4+63.81 - 5+51.81	-40	-21.25	1650
5+40.31 - 5+77.49	-25	-4.75	753
5+77.49 - 5+94.99	-25	-1.75	407
5+94.99 - 6+50.49	-25	+1.25	1457
		Total =	13205 sf
		(Use 13250 sf)	
PZ-27			
6+50.49 - 8+77	-26	+10.0	8154
		(Use 8200 sf)	

~~REASONABLE CONTRACT~~ ESTIMATE

SHEET OF

PROJECT T-Wall - West

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete:				
	Wall	300	CY		
	Base Slab	420	CY		
	Stabilization Slab	60	CY		
	Reinforcement	840000	lb		
	Concrete Prestressed Piles	11400	ef		
	~~Sheet Piling, PMA-22~~	~~12000~~	~~sf~~		
	Cement	4035	cwt		
	Waterstops, 3-bulb type	330	ef		
	Construction Jt. Mtl	530	ef		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OF—262-653

PROJECT Florida Avenue Complex-West	Page — of —	COMPUTED BY RJGr	DATE 9 Aug 76
SUBJECT T-Wall -- Concrete		CHECKED BY	DATE

Base Slab ~

W/L sta 0+40 to sta 3+79.71:

$2.5(8)(339.71) = 6794.2\ cf = 251.6\ CY$

W/L sta 4+60.46 to sta 5+55.99:

$2.5(8)(95.53) = 1910.6\ cf = 70.8\ CY$

W/L sta 6+69.21 to sta 6+97.5:

$2.5(8)(28.29) = 565.8\ cf = 21.0\ CY$ +

W/L sta 7+84.5 to sta. 8+09.5:

$2.5(8)(25) + 2(2.5)(8)(2) = 580\ cf = 21.5\ CY$

W/L sta. 5+55.99 to sta 6+02.71:

$11(2.5)(46.72) = 1284\ cf = 47.6\ CY$ +

Total = 412.5 CY

(Use 420 CY)

Walls ~

W/L sta 0+40 to sta 0+98.09:

$[(1)(11) + \frac{11^2}{24}(1/2)](57.69) = 785.4\ cf = 29.1\ CY$

W/L sta 0+98.09 to sta 3+79.71:

$[1(12) + \frac{12^2}{24}(1/2)](281.62) = 4224.3\ cf = 156.5\ CY$

W/L sta 4+60.46 to sta. 5+57.99:

$[1(10) + \frac{10^2}{24}(1/2)](97.53) = 1178.5\ cf = 43.6\ CY$

x W/L sta 5+57.99 to 6+02.71:

$[1(13) + \frac{13^2}{24}(1/2)](44.72) = 738.8\ cf = 27.4\ CY$

PROJECT Florida Avenue Complex-West	Page __ of __	COMPUTED BY RJG	DATE 9 Aug 76
SUBJECT T-Walls - Concrete		CHECKED BY	DATE

Walls -

W/L sta. 6+69.21 to sta 6+97.5:

$[1(13) + \frac{13^2}{24}(1/2)]\,28.29 = 467.4\,cf = 17.3\,CY$

W/L sta. 7+84.5 to sta 7+97:

$[1(10) + \frac{10^2}{24}(1/2)]\,12.5 = 151.0\,cf = 5.6\,CY$

W/L sta. 7+97 to sta. 8+09.5:

$[1(7.5) + \frac{7.5^2}{24}(1/2)]\,12.5 = 108.4\,cf = 4.0\,CY$

Total = 283.5 CY
(Use 300 CY)

Stabilization Slab -

W/L sta. 0+40 to sta 5+55.99

and 6+97.5

W/L sta 6+69.21 to sta 8+09.5:

$\frac{4}{12}(8)(488.53) = 1302.75\,cf = 48.24\,CY$

+ W/L sta 5+55.99 to sta 6+02.71:

$4/12\,(11)(46.72) = 171.3\,cf = 6.3\,CY$

Total = 54.6 CY
(Use 60 CY)

PROJECT Florida Avenue Complex-West	Page __ of __	COMPUTED BY RJGr	DATE 9Aug 76
SUBJECT T-Wall-Cement		CHECKED BY	DATE

Cement ~

Vol. of concrete = 780 CY

Volume of cement = 780 x 5.17 = 4032.6 cwt

Use 4035 cwt

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex-West	Page __ of __		RJGr	23 Aug 76
SUBJECT			CHECKED BY	DATE
PMA-22 Steel Sheet Piling				

W/L sta 0+40 to W/L sta 1+00 :

Top sheet piling = El. +1.25
Bottom sheet piling = El. -20.

A = 60 x 21.25 = 1275 sq ft

W/L sta 1+00 to W/L sta 3+79.7 :

Top sheet piling = El. +0.25
Bottom sheet piling = El. -20

A = 279.7 x 20.25 = 5663.92 sq ft

W/L sta 4+60.46 to W/L sta 5+55.47:

Top sheet piling = El. +2.25
Bottom sheet piling = El. -25

A = 95.01 x 27.25' = 2589.02 sq ft

x W/L sta 5+55.47 to W/L sta 6+02.71:

Top sheet piling = El. -0.75
Bottom sheet piling = El. -25

A = 47.24 x 24.25 = 1145.57

x W/L sta 6+69.21 to W/L sta 6+97.50:

Top sheet piling = El. -0.75
Bottom sheet piling = El. -25

A = 28.29 x 24.25 = 686.03 sq ft

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex-West	Page __ of __		RJG	23 Aug 76
SUBJECT			CHECKED BY	DATE
PMA-22 Steel Sheet Piling				

Continued—

W/L sta 7+84.50 to W/L sta. 7+99.50:

Top sheet piling = El. 2.25
Bottom sheet piling = El. -20.

$A = 22.25 \times 15 = 333.75$ sq ft

W/L sta 7+99.5 to W/L sta 8+09.50:

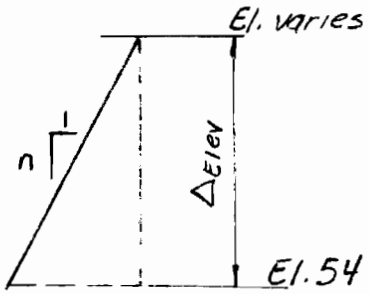
Top sheet piling = El. +4.75
Bottom sheet piling = El. -20

$A = 24.75 \times 10 = 247.5$ sq ft

Total Area = 11940.79 sq ft
(Use 12000 sq ft)

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY	DATE
			RJGr	9 Aug 76
SUBJECT	T-Wall - Concrete Filling		CHECKED BY	DATE

Concrete Prestressed Piling



$$\text{Pile Length} = \Delta_{Elev}\sqrt{1 + 1/n^2}$$

Monolith	ΔElev	No Piles	Batter	Pile Length	Total
3	54.5	15	2:1	61'	915'
		1	4:1	56'	56'
4,5	53.5	32	2:1	60'	1920'
		8	0	53.5'	428'
6	53.5	18	2:1	60'	1080'
		2	0	53.5	107'
8	53.5	16	2:1	60'	960'
		3	4:1	55.5'	167'
11	55.5	8	2:1	62'	496'
		4	2.5:1	60'	240'
12	55.5	17	2:1	62'	1054'
		1	2.5:1	60'	60'
13	52.5	10	2:1	59'	590'
		1	2.5:1	57'	57'
		1	3:1	55'	55'
7	53.5	14	2:1	60'	840'
		4	0	53.5	214'

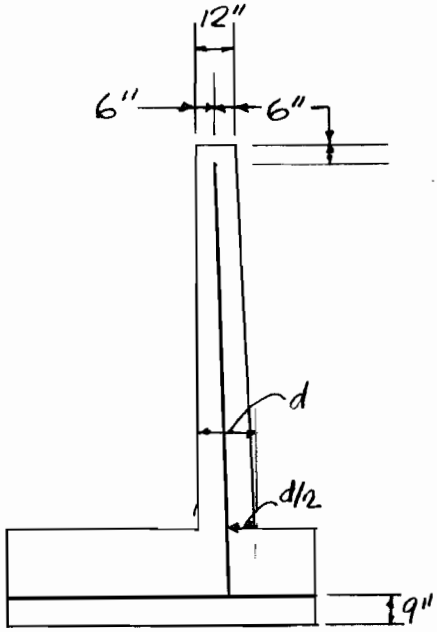
PROJECT Florida Avenue Complex - West	Page __ of __	COMPUTED BY RJGr	DATE 9 Aug 76
SUBJECT T-Wall - Concrete Piling		CHECKED BY	DATE

Monolith	Aelev	No Piles	Batter	Pile Length	Total
x14	52.5	14	2:1	59'	826'
x16	52.5	6	2:1	59'	354'
		6	4:1	54'	324'
18	55.5	6	2:1	62'	372'
19	58	4	2:1	65'	260'

Total = 11375 lf

PROJECT	Florida Avenue Complex-West	Page __ of __	COMPUTED BY KJGr	DATE 9 Aug 76
SUBJECT	T-Wall - Waterstops		CHECKED BY	DATE

Waterstops, 3-Bulb Type



Typical 3-Bulb Waterstop Detail

W/L sta 0+95.59; $L = 11' + 2.5' - 0.75' + 8' = 20.75'$

W/L sta 1+57.09, W/L sta. 2+18.59,

W/L sta 2+74.09, W/L sta. 3+79.72:

$4L = 4(12 + 2.5 - 0.75 + 8) = 87.0'$

W/L sta. 4+16.47, W/L sta. 4+63.47,

W/L sta. 5+10.97, W/L sta 5+55.47:

L-type

$4L = 4(10 + 2.5 - 0.75 + 8) = 79.0'$

x W/L sta. 5+77.74, W/L sta 6+02.74:

$2L = 2(13 + 2.5 - 0.75 + 11) = 51.5'$

PROJECT	Florida Avenue Complex-West	Page __ of __	COMPUTED BY RJgr	DATE 9 Aug 76
SUBJECT	T-Wall - Waterstops		CHECKED BY	DATE

× W/L sta 6+69.21: L = 13 + 1.25 + 8 = 22.25'

W/L sta 6+97.50: L = 12 + 2.25 + 11 = 25.25'

W/L sta 7+84.5 : L = 12 + 2.25 + 11 = 25.25'

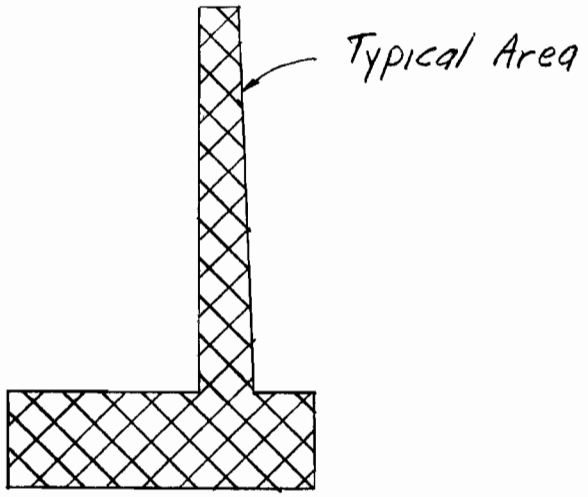
W/L sta 7+99.5 : L = 7.5 + 1.75 + 8 = 17.25'

Total = 328.25'

(Use 330')

PROJECT	Florida Avenue Complex - West	Page __ of __	COMPUTED BY RJGr	DATE 10 Aug 76
SUBJECT	T-Wall - Construction Joint Material		CHECKED BY	DATE

Construction Joint Material -



W/L sta 0+95.59 : $A = \frac{1}{2}(11)\left[2+\frac{11}{24}\right] + 8(2.5) = 33.5$ sf

W/L sta. 1+57.09, W/L sta 2+18.59, W/L sta 2+74.09:

$3A = \left[\frac{1}{2}(12)\left(2+\frac{12}{24}\right) + 20\right]3 = 105$ sf

W/L sta 3+79.72 : $A = \frac{1}{2}(7.8)\left(2+\frac{7.8}{24}\right) + 20 = 29.1$ sf

W/L sta 4+16.47, W/L sta 4+63.47, W/L sta 5+10.97,
W/L sta 5+55.47: $4A = \left[\frac{1}{2}(10)\left(2+\frac{10}{24}\right)+20\right]4 = 128.3$ sf

W/L sta 5+77.74, W/L sta 6+02.74:

$2A = \left[\frac{1}{2}(13)\left(2+\frac{13}{24}\right) + 11(2.5)\right]2 = 88.1$ sf

W/L sta 6+69.21, W/L sta 6+97.5:

$2A = \left[\frac{1}{2}(13)\left(2+\frac{13}{24}\right) + 8(2.5)\right]2 = 73.1$ sf

PROJECT	Florida Avenue Complex-West	Page __ of __	COMPUTED BY RJGr	DATE 10 Aug 76
SUBJECT	T-Wall- Construction Joint Material		CHECKED BY	DATE

W/L sta 7+84.5 : $A = \frac{1}{2}(12)(2+\frac{12}{24}) + 8(2.5) = 35$ sf

W/L sta 7+99.5 : $A = \frac{1}{2}(7.5)(2+\frac{7.5}{24}) + 8(2.5) = 28.7$ sf

Total = 520.8 sf

(Use 530 sf)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY	DATE
			RJP	10 Aug 76
SUBJECT	Reinforcement, T-Wall – West		CHECKED BY	DATE

Monolith			Transverse		Longitudinal		Vertical		Height	Horizontal	
No.	L	W	Top	Bottom	Top	Bottom	F.S.	BS.		F.S.	B.S.
3	56.83	8'	#8,12"	#8,12"	15-#6	15-#6	#6,6"	#6,12"	11'	#5,12	
4	61.5'	8'	#8,12"	#8,12"	8-#6	8-#6	#6,6"	#6,12"	12'	#5,12	
5	61.5'	8'	#8,12	#8,12"	8-#6	8-#6	#6,6"	#6,12"	12'	#5,12	
6	57.5	8'	#8,12	#8,12"	15 #6	15 #6	#6,6"	#6,12"	12'	#5,12	
7	50.0	8'	#8,12	#8,12"	8-#6	8 #6	#6,6"	#6,12"	12'	#5,12	
8	55.8	8'	#8,12	#8,12"	15-#6	15 #6	#6,6"	#6,12"	12'	#5,12	
11	47.5	8'	#8,12	#8,12"	8-#6	8-#6	#7,12"	#6,12"	10'	#5,12	
12	39.5	8	#8,12	#8,12"	15-#6	15 #6	#7,12"	#6,12"	10'	#6,12	
13	21.75	11	#9,12	#8,12"	10 #6	10 #6	#7,6"	#6,12	13'	#6,12	
14	24	11	#9,12	#9,12	10 #6	10 #6	#7,6"	#6,12	13'	#6,12	
16	28.3	8	#8,12	#8,12	15 #6	15 #6	#7,6"	#6,12	13'	#5,12	
18	15.45	8	#8,12	#8,12	15 #6	15 #6	#7,12"	#6,12	10'	#5,12	
19	10'	8'	#8,12	#8,12	9,#6	9 #6	#6,12"	#6,12	7.5'	#5,12	

53.75

PROJECT Florida Avenue Complex	Page __ of __	COMPUTED BY RJr	DATE 10 Aug 76
SUBJECT Reinforcement - West		CHECKED BY	DATE

#5- 22 x 56.83' x 1.043 = 1304

10 x 12 x (61.5' + 61.5' + 57.5' + 50' + 55.8') x 1.043 = 35833

6 x 10 x (47.5' + 39.5' + 15.45') x 1.043 = 6411

26 x 28.3' x 1.043 = 767

15 x 10' x 1.043 = 156

#6- 272 x 529.63' x 1.502 = 216377

530 x 180' x 1.502 = 143291

687 x 86' x 1.502 = 88741

10 x 10' x 1.502 = 150

72 x 85.25' x 1.502 = 9219

#7 - 251 x 84' x 2.044 = 43096

#8 - 484 x 220' x 2.67 = 284302

46 x 26' x 2.67 = 3193

#9 - 46 x 26' x 3.4 = 4066

Total = 836906 lb.

(Use 840000 lb)

[redacted] ESTIMATE

SHEET OF

PROJECT Florida Avenue Complex - Swing Gate, Harbor Rd, West

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	1st pour - Base Slab	28.0	CY	80	230 ~~2240~~
	2nd pour - Base Slab	1.0	CY	80	80
	Step - Base Slab	1.0	CY	80	80
	Stabilization Slab	4.0	CY	80	320
	Columns	4.0	CY	150	600
	Walls	0.5	CY	150	~~7580~~
	Cement	200.0	CWT	2.50	500
	Reinforcement	4800	lb	0.35	1680
	Structural Steel	—			
	gates	10800	lb	1.75	18900
	Embedded steel	600	lb	1.75	1050
	Concrete Piling	1019	lf	15	15290
	Steel Sheet Piling, PMA-22	1050	sf	8	8400
					47210

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OF—262-683

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	24 Aug 76
SUBJECT		CHECKED BY	DATE
Swing Gate, Harbor Road, Concrete, Cement			

Concrete -

1st pour, Base Slab = 2.5 x 8 x 36.75/27

= 27.2 CY

2nd pour, Base Slab = 0.5 x 1. x 36.75/27

= 0.7 CY

Step = 2.2 x 1.5 x 8/27

= 1.0 CY

Stabilization Slab = 4/12 x 8 x 36.75/27

= 3.6 CY

Walls & Columns = $\left[(2 \times 2 \times 8.55) + (2 \times 2 \times 14.8) + (0.5 \times 1 \times 7.8) + 0.5\left(\frac{7.8^2}{48}\right) + (0.75 \times 1 \times 7.8) + (0.75)\left(\frac{7.8^2}{48}\right)\right] / 27$

= 3.9 CY

Cement = 36.4 x 5.17 = 188.2 cwt

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	24 Aug 76
SUBJECT		CHECKED BY	DATE
Reinforcement			

Reinforcement ~

Base Slab - Top, Transverse:

36 #8 from 0'- 8'

Base Slab - Bottom, Transverse:

36 #8 from 0'- 8'

Base Slab - Top ; Bottom, Longitudinal:

16 #8 from 0'- 36.75'

Hinged Column:

22 #9 from El 6.2 to El 14.0

16 #10 from El. 14 to El. 21

Column:

16 #10 from El. 6.2 to El. 14.75

#10 -	16 x 7 x 4.303 =	481.9 lb
#10 -	16 x 7.8 x 4.303 =	537.0 lb
#9 -	22 x 7.8' x 3.4 =	583.4 lb
#8 -	72 (8') x 2.67 =	1537.9 lb
	16 x 36.75 x 2.67 =	1570.0 lb
	Total =	4710.2 lb
	(Use 4800 lb)	

PROJECT		COMPUTED BY	DATE
Florida Avenue Complex	Page __ of __	RJGr	24 Aug 76
SUBJECT		CHECKED BY	DATE
Structural Steel, Concrete Piling, Sheet Piling			

Structural Steel ~

Gate Weight = 1000 lb
Other Steel = 600 lb

Concrete Prestressed Piles ~

12 Battered Piles at 65.4' = 785 lf
4 Vertical Piles at 58.5' = 234 lf
1019 lf

Steel Sheet Piles ~

El. 3.7 to El. -25 = 28.7 use 28'
Length = 36.75'

Total Area = 1029 sf

(Use 1050 sq ft)

[redacted] ESTIMATE | SHEET OF

PROJECT: Florida Avenue Complex - Swing Gate, Railroad, West IHNC | INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Stabilization Slab	5	CY		
	Base Slab	37	CY		
	Wall	5	CY		
	Columns	4.5	CY		
	Sill	7.5	CY		
	Structural Steel	—			
	Gate	9000	lb		
	Embedded Steel	1000	lb		
	Reinforcement	10800	lb		
	Conc. Prestressed Piles	1250	lf		
	Steel Sheet Piles, PMA22	1350	sf		
	Cement	305	cwt		
	Support Pedestal				
	Concrete				
	Base Slab	0.4	CY		
	Wall	0.8	CY		
	Reinforcement				
	Concrete Pile	56	lf		
	Jack				

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OF—262-453

PROJECT		COMPUTED BY	DATE
Florida Avenue Complex	Page __ of __	RJG	25 Aug 76
SUBJECT		CHECKED BY	DATE
Concrete			

Concrete ~

Base Slab = (49' x 2.5' x 8')/27

= 36.3 CY

Stabilization Slab = (49' x $\frac{4}{12}$' x 8')/27

= 4.8 CY

Walls = [(6.5' x 1' x 10') + (11.5' x 3' x 10') + (0.5' x 1.5' x 10') + $\frac{1}{2}$ ($\frac{10^2}{2.4}$) 6.5]/27

= 4.9 CY

Hinged Column = (2' x 2' x 17')/27

= 2.5 CY

Column = (2 x 2 x 10.75)/27

= 1.6 CY

Sill = (3.53' x 1.5' x 34.33)/27

= 6.7 CY

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page — of —		RJGr	25 Aug 76
SUBJECT			CHECKED BY	DATE
Concrete, Cement				

Pedestal = (1.67' x 1.67' x 3.53') / 27

= 0.4 CY

Cement = 57.2 x 5.17 = 295.7 cwt

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page — of —		RJGr	25 Aug 76
SUBJECT			CHECKED BY	DATE
Reinforcement				

Reinforcement -

Base Slab, Top; Bottom, Transverse

#9, 12" from 0'-8'

Base Slab, Top and Bottom, Longitudinal

16-#9 from 0'-49'

Columns,

16-#11 from El. 1.5 to El 21

16-#11 from El. 1.5 to El. 14.75

Walls, Both sides, Horizontal

#6, 12 from El. 4.0 to El. 14.0
(12' x 2 sides)

Vertical,

#8-12" from 0-12'

#7-12" from 0-12"
(El. 1.5 to El. 14.0)

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	25 Aug 76
SUBJECT		CHECKED BY	DATE
Reinforcement			

Sill,

8-#6 0-36'

#6-12", at 8.54' each

#6 – 8 x 36' x 1.502 = 432.6

36 x 8.54' x 1.502 = 462.4

20 x 12' x 1.502 = 360.5

#7 – 12 x 12.5' x 2.044 = 306.6

#8 – 12 x 12.5 x 2.67 = 400.5

#9 – 49 x 20' x 3.4 = 3332.0

16 x 49' x 3.4 = 2665.6

#11 – 16 x 19.5' x 5.313 = 1657.9

16 x 13.25' x 5.313 = 1126.4

Total = 10744.316

(use 10800 lb)

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page — of —		RJgr	25 Aug 76
SUBJECT			CHECKED BY	DATE
Concrete, Cement (Support Pedestal)				

Support pedestal ~

Concrete, Base = (2' x 1.75' x 2')/27

= 0.3 CY (Use 0.3 CY)

2nd Pour = (1' x 2' x 0.5)/27

= 0.1 CY (Use 0.1 CY)

Wall = (1.25' x 8.14' x 2')/27

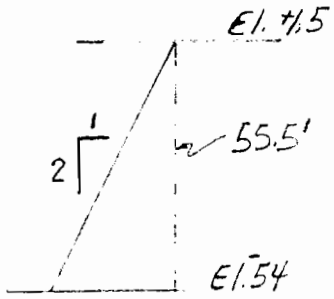
= 0.8 (Use 0.8 CY)

~~Reinforcement =~~

Cement = 1.2 x 5.17 = 6.2 cwt (use 6.5 cwt)

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJR	25 Aug 76
SUBJECT		CHECKED BY	DATE
Concrete Piling			

Concrete Prestressed Piling -



Battered Pile Length = $\sqrt{(55.5)^2+(27.75)^2}$

= 62.05' (Use 62')

13 Battered Piles @ 62' = 806'

8 Vertical Piles @ 55.5' = 444

1250 l.f.

Steel Sheet Piling:

Top sheet piling = El. +2.25

Bottom sheet piling = El. -25

Area = 49 x 27.25 = 1335.25 sq ft

(Use 1350 sq ft)

~~REASONABLE CONTRACT~~ ESTIMATE					SHEET OF
PROJECT Vertical Lift Gate Structure, West					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete:				
	Base Slab (-2' to El-18.5'	300	CY		
	Walls (El-18.5 to El+2)	251	CY		
	Deck Slab (El 2 to El 4.0)	91	CY		
	Walls (El 2 to El 27)	147	CY		
	Floodwalls (El 2 to El 14)	23	CY		
	Stairs	4.0	CY		
	Machine Rm Slab (El. 30)	64	CY		
	Machine Rm Walls	41	CY		
	Roof Slab (El. 40)	17	CY		
	Cement:	4850	CWT		
	Machinery (Hoists-Gate)		2EA		
	Lighting		L.S.		
	Railing				
	Protective Sealing		L.S.		
	Cathodic Protection		L.S.		
	Structural Steel:				
	Embedded	21300	lb		
	Exposed	70140	lb		
	Gates	72600	lb		
	Reinforcement	181700	lb		
	Concrete Prestressed Piles 14x14	6000.	lf		
	Misscellaneous		L.S.		
	Steel Sheet Piling, PMA-22	2150	sf		

REASONABLE CONTRACT ESTIMATE

SHEET OF

PROJECT

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Structure Excavation	3250	CY		
	Structure Fill	2250	CY		
	Cofferdam Excavation	2700	CY		
	Cofferdam Fill (Shell)	4550	CY		
	Cofferdam Sheet Pile (PZ-32)	40350	SF		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-262-453

PROJECT		COMPUTED BY	DATE
FLORIDA AVENUE COMPLEX	Page __ of __	HMB	NOV. '75
SUBJECT		CHECKED BY	DATE
VER. LIFT GATE STR. - TEMP. BYPASS CHANNEL			

Contract Estimate - Quantity Takeoff - Base On West Side

DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	COST
Channel Excavation	5,300	cu. yd.	5.00	26,500.00
Steel Sheet Pile Walls PZ 38 USS EX-TEN 55	48,600	Sq. ft.	8.00	388,800.00
Sheet Pile Cover Plates Steel Plate, t=1 5/16"	5,500	Sq. ft.	16.00	88,000.00
" " t= 5/16"	6,070	Sq. ft.	4.00	24,280.00
Wale Channels C 15X40	1,434	ft.	11.00	15,774.00
Standard Pipe 4" 560'	6,045	lb.	0.50	3,022.50
Tie Rod 3 1/4" 935'	26,400	lb.	0.75	19,800.00
Steel H-Piles HP 14X73	3,234	ft.	13.00	42,042.00
Concrete	80	cu. yd.	100.00	8,000.00
Steel Reinforcement	11,037	lb.	.40	4,414.80
Pulling Sheet Piles	48,600	sq. ft.	1.00	48,600.00
Pulling H Piles	3,234	ft.	2.00	6,468.00
Channel Backfill	5,300	cu. yd.	5.00	26,500.00
Salvage Steel (Sheet pile+Plates, H-Piles, Wale, Pipe)	1,260	tons	40.00	-50,400.00
				651,801.30
			10% Profit	65,180.10
			30% Contingencies	195,540.00
			Total Cost =	912,521.40
			One On Each Side	2
			Cost Of Both Bypass Channel =	1,825,042.80

PROJECT			
Vertical Lift Gate	Page — of —	COMPUTED BY RJGr	DATE 26 Aug 76
SUBJECT Concrete, Cement		CHECKED BY	DATE

Concrete -

(All concrete volumes from Concrete weight computations.)

$$\text{Volume} = \frac{\text{Weight}}{0.15(27)}$$

Item	Weight (Kips)	Volume (CY) (Estimated)
Base Slab (El. -22 to El. -18.5)	1213.8	300
Walls (El. -18.5 to El. +2)	1015.89	251
Deck Slab (El. +2 to El. +4)	366.83	91
Walls (El. +2 to El. 27)	594.97	147
Floodwalls (El. 2 to El 14)	90.0	23
Stairs	13.14	4
Machine Room Slab	255.93	64
Machine Room Walls	165.76	41
Roof Slab (El. 40)	68.01	17

Cement Volume = 938 CY x 5.17 cwt/CY

= 4849.46 cwt (Use 4850)

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJG	26 Aug 76
SUBJECT Structural Steel, Reinforcement		CHECKED BY	DATE

Structural Steel -

All weights obtained from computations

Gate Weight = 36300 lb/Gate

Other Structural Weight = 91440 lb

Reinforcement -

See Schedule No. 3, Reinforcement Design.

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	27 Aug 76
SUBJECT		CHECKED BY	DATE
Concrete Piling			

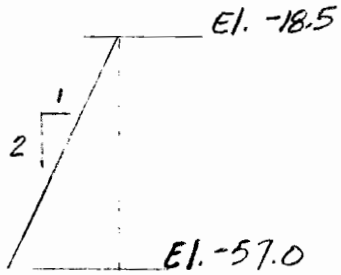
Concrete Prestressed Piling -

Battered Piles,

5 rows with 13 piles/rows = 65 piles

4 rows with 12 piles/rows = 48 piles

113 piles



Length = $\sqrt{(38.5)^2 + (19.25)^2}$

= 43.04 (Use 44')

∴ Total Length = 4972 lf

Vertical Piles,

2 rows with 13 piles/row = 26 piles

Length = 38.5'

∴ Total Length = 1001 lf

Total Length Piles = 5973 lf

(Use 6000 lf)

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page — of —		RJG	27 Aug 76
SUBJECT			CHECKED BY	DATE
Steel Sheet Piling				

Steel Sheet Piling -

Use PZ-27 sheet Piling.

From El. -21 to El. -45.0

and W/L sta 5+91.21 to sta 6+79.21

∴ Total Sheet Piling = 24' x 88' = 2112.0 sf

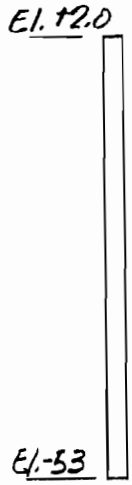
(Use 2150 sq ft)

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page — of —		RJgr	27Sep 76
SUBJECT			CHECKED BY	DATE
Cofferdam Steel Sheet Piling				

Cofferdam Steel Sheet Piling ~

6 cells, Circumference = 95.03'/cell

5 intermediate cells, Length = 32.52'/cell



Length of piling = 55'

∴ Area = (6 x 95.03' x 55') +
(5 x 32.52' x 55')

= 40302.8 sq ft

(Use 40350 sq ft)

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page __ of __		RJGr	30 Aug
SUBJECT			CHECKED BY	DATE
Cofferdam Excavation				

Cofferdam Excavation:

End Area A_n (CY/')	Average End Area $\frac{1}{2}(A_n + A_{n+1})$ (CY/')	Length L_n (ft)	Volume $\frac{1}{2}(A_n + A_{n+1})L_n$ (CY)
14.34			
	14.87	23.0	342.01
15.39			
	16.27	30.0	488.10
17.14			
	17.64	30.0	529.20
18.14			
	17.74	30.0	532.20
17.33			
	16.46	30.0	493.80
15.58			
	15.32	18.0	275.76
15.06			
		Excavation Volume =	2661.07 CY
			(Use 2700 CY)

Cofferdam Fill:

29.44			
	29.16	23.0	670.68
28.87			
	28.25	30.0	847.50
27.63			
	27.29	30.0	818.70
26.94			
	27.12	30.0	813.60
27.29			
	27.91	30.0	837.30
28.53			
	28.86	18.0	519.48
29.19			
		Fill Volume	= 4507.26 CY
	(Use 4550 CY)		

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 30 Aug 76
SUBJECT	Structure Excavation, VLG		CHECKED BY	DATE

Structure Excavation:

End Area An (CY/1)	Average End Area ½(An+An+1) (CY/1)	Length Ln (ft.)	Volume ½(An+An+1)Ln (CY)
5.43			
	8.67	23	199.41
11.91			
	18.61	30	558.30
25.30			
	27.88	30	836.40
30.46			
	28.05	30	841.50
25.64			
	19.60	30	588.00
13.56			
	10.71	18	192.78
7.86			

Structure Excavation Volume = 3216.39 cy
(Use 3250 cy)

Structure Fill:

5.43			
	5.79	23	133.17
6.15			
	10.94	30	328.20
15.73			
	20.40	30	612.00
25.06			
	21.21	30	636.30
17.35			
	12.57	30	377.10
7.79			
	7.83	18	140.94
7.86			

Structure Fill Volume = 2227.71 cy.
(Use 2250 cy)

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	31 Aug 76
SUBJECT		CHECKED BY	DATE
Bypass Channel Excavation			

Bypass Channel Excavation

End Area An (cy/l)	Average End Area ½(An+An+1) (cy/l)	Length Ln (ft)	Volume ½(An+An+1)Ln (cy)
14.3			
	14.9	23	342.7
15.4			
	16.2	30	489.0
17.1			
	17.6	30	528.0
18.1			
	17.7	30	531.0
17.3			
	16.5	30	495.0
15.6			
	15.4	18	277.2
15.1			
			2662.9
			(Use 2700 cy)

Bypass Channel Fill

29.4			
	29.2	23	671.6
28.9			
	28.3	30	849.0
27.6			
	27.3	30	819.0
26.9			
	27.1	30	813.0
27.3			
	27.9	30	837.0
28.5			
	28.5	18	504.0
29.2			
			4493.6
			(Use 4500 cy)

~~REASONABLE CONTRACT~~ ESTIMATE					SHEET OF
PROJECT VLG - Approach Structure, West					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Pace Slab	546	CY		
	Wall	260	CY		
	Stabilization Slab	52	CY		
	Cement	4425	cwt		
	Concrete Prestressed Piling	3424	ef		
	Reinforcement	627100	lb		

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page __ of __		RJGr	1 Sep 76
SUBJECT			CHECKED BY	DATE
Concrete, Cement				

Vertical Lift Gates -

West Approach Basins;

From computations,

Base Slab Vol = 545.8 CY

Wall Vol. = 257.8 CY

Stabilization Slab = 52.0 CY

Cement Volume = 855.6 x 5.17 = 4423.5 cwt

PROJECT		Page — of —	COMPUTED BY	DATE
Florida Avenue Complex			RJGr	1 Sep 76
SUBJECT Concrete Piling			CHECKED BY	DATE

VLG

Concrete Prestressed Piling ~

Vertical Piles = 32 x 2 = 64 piles

Battered Piles = 14 x 2 = 28 piles

Battered Piles length = 40'

Vertical Piles length = 36'

∴ Total length = 2304 + 1120

= 3424 lf

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJG	3 Sep 76
SUBJECT		CHECKED BY	DATE
Reinforcement			

1 of 6

Reinforcement ~

Longitudinal Steel - Base Slab

Top - #10 from 0-55', (215 #10)

Bottom - #9 from 0-55', (48 #9)

Transverse Steel - Base Slab

Top and Bottom - #10 from 0-49', (117 #10)

Vertical Steel - Walls

Outside - #8 from 0-20', (38 #8)

- #9 from 20-55', (154 #9)

Inside - #9 from 0-55, (108 #9)

Horizontal Steel - Walls

Outside / Inside - El. -18.5 to El. +4 (88 #7)

#10 - 332 x 104' x 4.303 #/1 = 148574

#9 - 310 x 145' x 3.40 #/1 = 152830

#8 - 38 x 20' x 2.67 #/1 = 2029

#7 - 88 x 56' x 2.044 #/1 = 10073

313506 lb

Total = 627012 lb (Use 627100 lb)

~~REASONABLE CONTRACT~~ ESTIMATE					SHEET OF
PROJECT Overhead Roller Gate – Flatwe					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Base Slab	107	CY	80	8560
	Walls	23	CY	150	3450
	Columns	17	CY	150	2550
	Beams (overhead)	23	CY	150	3450
	Stabilization Slab	12	CY	80	960
	Cement	940	cwt	2.50	2350
	Structural Steel	—	#		
	Gate	26000	lb	1.75	45500
	Embedded Steel	5000	lb	1.50	7500
	Reinforcement	26000	lb	0.35	9100
	Steel Sheet Piling, PMA-22	2200	sf	8	17600
	Concrete Prestressed Piling	2020	lf	15	30300
	~~Water stops~~				

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OF—262-653

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	7 Sep 76
SUBJECT		CHECKED BY	DATE
Concrete, Cement			

Concrete -

Stabilization Slab = (87' x 11' x 4/12)/27

= 11.8 CY (Use 12 CY)

Base Slab = (87' x 11' x 3)/27

= 106.3 CY (Use 107 CY)

Walls = $\left[(40' \times 1' \times 12.33') + \frac{1}{2}\left(\frac{12.33^2}{24}\right) 40\right]/27$

= 23.0 CY (Use 23 CY)

Columns = [2(2.5' x 3' x 22.58') +

+ 2(2.5 x 22.58)]/27

= 16.7 CY (Use 17 CY)

Overhead Beam = [(2.75' x 2') + (1.5' x 1.75')] 77'/27

= 23.2 CY (Use 24 CY)

Cement Volume = (181 CY) x 5.17 cwT/CY

= 935.8 cwt (Use 940 cwt)

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJgr	DATE 7 Sep 76
SUBJECT	Structural Steel		CHECKED BY	DATE

Structural Steel -

Gate Weight = 260001b.

Exposed/or Embedded Steel,

1-S12x50	50 x 77 = 38501b
misscellaneous steel	1000 lb

Use 5000 lb

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page __ of __		RJGr	7 Sep 76
SUBJECT			CHECKED BY	DATE
Reinforcement				

Reinforcement -

Base Slab, Top, Transverse -
#9, 12" from 0-8'

Base Slab, Bottom, Transverse -
#9, 12" from 0-8'

Base Slab, Top, Longitudinal -
12-#9 from 0-87'

Base Slab, Bottom, Longitudinal -
13-#9 from 0-87'

Walls, Vertical (Both sides) -
#6, 12" from El. 14 to El 4.67
#9, 12" from El. 6.5 to El. 1.0
#6, 12" from El. 14.0 to El. 2.0
#9, 12" from El. 3.83 to El. 1.0

Walls, Horizontal (Both sides) -
#6, 12" for 40' (El. 14 to El. 2.0)

Beam, Overhead -
14 #11 for 77'
6 #4 for 77'

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJgr	7 Sep 76
SUBJECT		CHECKED BY	DATE
Reinforcement			

Columns 1;3, Vertical El. 2.0 to El. 14.0 –

9-#11's

El. 14 to El. 24.5 –

8 #11's

Column 5, vertical –

El 2.0 to El. 14.0

6-#11's

El. 14 to El. 24.5

5-#11's

#4 – 6 x 77' x 0.668 = 308.6

#6 – 40 x 9.33' x 1.502 = 560.6

40 x 12.0' x 1.502 = 721.0

24 x 40' x 1.502 = 1441.9

#9 – 87 x 8' x 3.4 = 2366.4

87 x 8 x 3.4 = 2366.4

12 x 87' x 3.4 = 3549.6

13 x 87' x 3.4 = 3845.4

40 x 7.5' x 3.4 = 1020.0

40 x 4.93 x 3.4 = 656.9

#11 – 14 x 77' x 5.313 = 5727.4

24 x 12' x 5.313 = 1530.1

21 x 10.5' x 5.313 = 1171.5

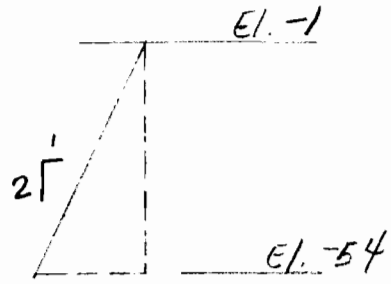
~~25265.8~~ ~~26002.2~~

Total = 25265.8

(Use 2600016)

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJgr	7 Sep 76
SUBJECT		CHECKED BY	DATE
Concrete Piling			

Concrete Prestressed Piling -



Pile length = $\sqrt{(53)^2 + (26.5)^2}$

= 59.25'

34 Battered Piles @ 59.25' = 2014.7 lf

(Use 2020 lf)

Steel Sheet Piling -

Top sheet piling = 0.25
Bottom sheet piling = -25

A = 24.75 x 87 = 2153.25 sq ft

(Use 2200 sq ft)

REASONABLE CONTRACT ESTIMATE

SHEET OF

PROJECT Fill / Excavation – West

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Fill	2870	CY		
	Excavation	2500	CY		

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJgr	8 Sep 76
SUBJECT		CHECKED BY	DATE
Fill Volume, West			

Levee and Floodwalls - Fill Volume

End Area A_n (CY/')	Average End Area $\frac{1}{2}(A_n + A_{n+1})$ (CY/')	Length L_n (ft)	Estimated Vol. $\frac{1}{2}(A_n+A_{n+1})L_n$ (CY)
1.45			
	1.32	10	13.2
1.19			
	1.95	40	78.0 91.2
2.71			
1.39			
	1.3	15	19.5
1.21			
	1.27	40	50.8
1.33			
	1.11	35	38.85
0.88			
	1.13	35	39.55
1.37			
	1.35	35	47.25
1.33			
	1.25	40	50.00
1.17			
	1.24	31.09	34.95 72.10
1.30			
1.24			
	2.58	20	51.6
3.91			
	3.15	20	63.0
2.38			
	3.06	40	122.4
3.74			
	4.04	14	56.56 665.26
4.34			
4.29			
	2.36	14.4	33.98 699.64
0.42			

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJG	8 Sep 76
SUBJECT		CHECKED BY	DATE
Fill Volume - West			

End Area An (CY/1)	Average End Area ½(An + An+1) (CY/1)	Length Ln (ft)	Estimated Vol. ½(An+An+1)Ln (CY)
	Continued from previous page.		
0.61	0.52	30	15.60
1.20	0.91	23.66	21.53
2.41	1.81	12.04	21.79
4.58	3.50	14.46	50.61
			809.17
13.79	13.16	22	289.52
12.53	12.68	50	634.00
12.82	12.84	18	231.12
12.86			1962.81
4.77	11.22	18	201.96
17.67	20.06	12	240.72
22.45			2406.49
12.63	6.71	65.10	436.82
0.78	0.39	57.45	22.41
0			2865.72

Estimated Fill Volume = 2865.72

(Use 2870 CY)

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue		RJR	8 Sep 76
SUBJECT		CHECKED BY	DATE
Excavation Volume - West			

Levee and Floodwall - Excavation Volume

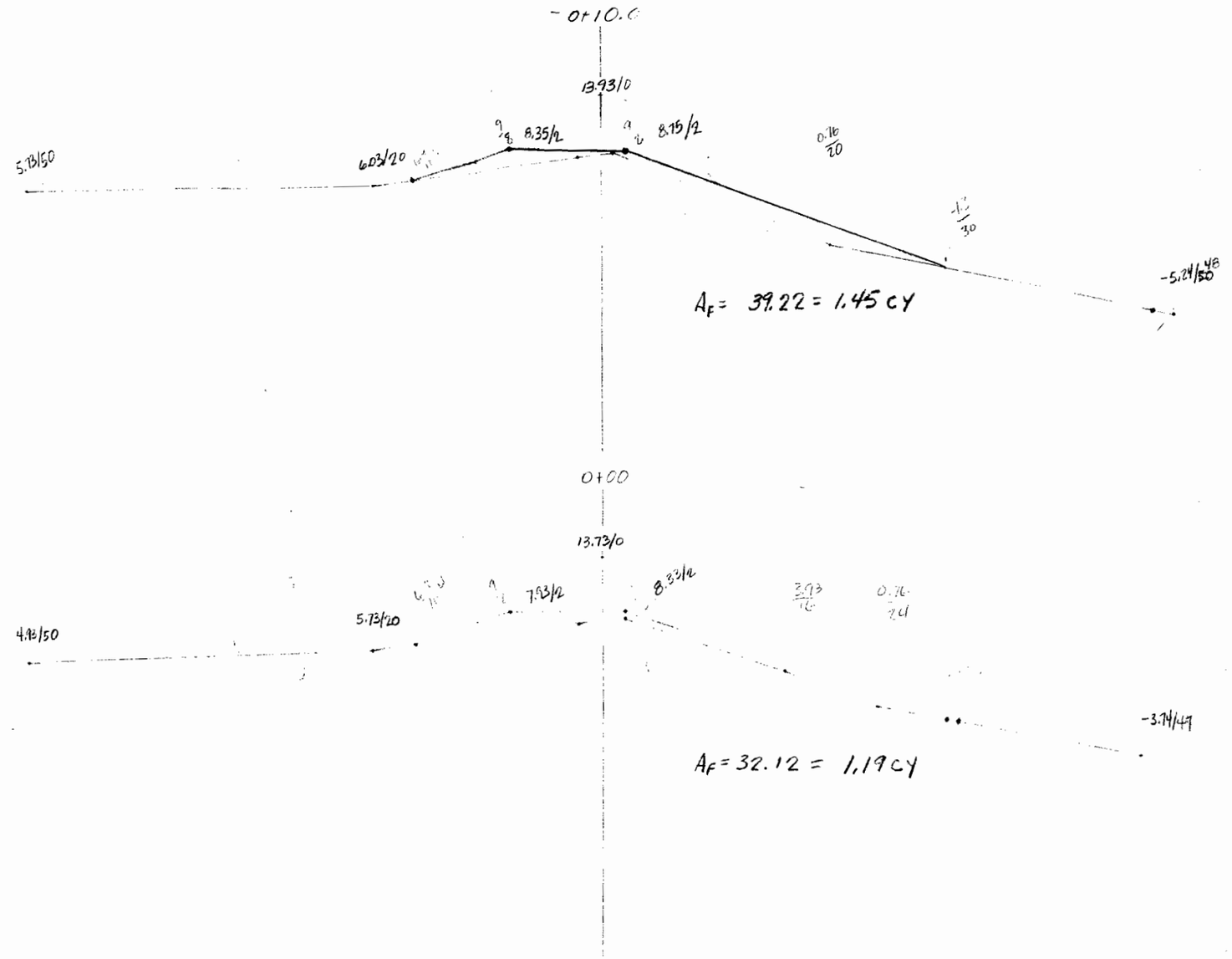
End Area A_n (CY/1)	Average End Area $\frac{1}{2}(A_n + A_{n+1})$ (CY/1)	Length L_n (ft)	Estimated Vol. $\frac{1}{2}(A_n + A_{n+1})L_n$ (CY)
0	2.55	15	38.25
5.10	3.34	40	133.60
1.58	2.88	35	100.80
1.30	1.09	35	38.15
0.88	1.98	35	69.30
3.08	8.08	40	323.20
13.52	15.42	31.09	479.41 1182.71
17.32			
19.15	14.39	20	287.80
9.62	7.25	20	145.00
4.88	6.19	40	247.60
7.49	8.00	14	112.00 794.4 1975.11
8.51			
8.60	5.22	14.4	75.17
1.84	1.03	30	30.90
0.55	1.25	23.66	29.58 2140.76
1.94			

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJG	8 Sep 76
SUBJECT		CHECKED BY	DATE
Excavation Volume -- West			

End Area An (CY/1)	Average End Area ½(An+An+1) (CY/1)	Length Ln (ft)	Estimated Vol. ½(An+An+1)Ln (CY)
	Continued from previous page.		
	2.55	12.04	30.70
3.15	1.58	14.46	22.85
0			2164.31
0	1.0	65.10	65.10
2.0	1.0	57.45	57.45
0			2286.86

Estimated Excavation Volume = 2286.86

(Use 2300 CY)

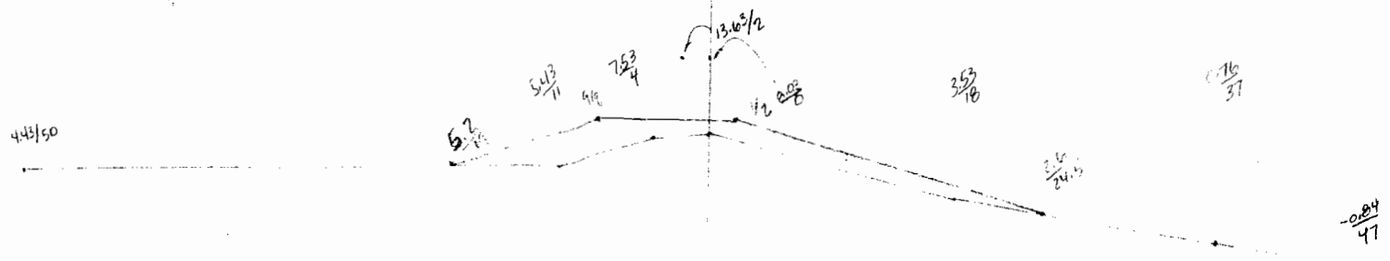


$A_F = 39.22 = 1.45\ CY$

$A_F = 32.12 = 1.19\ CY$

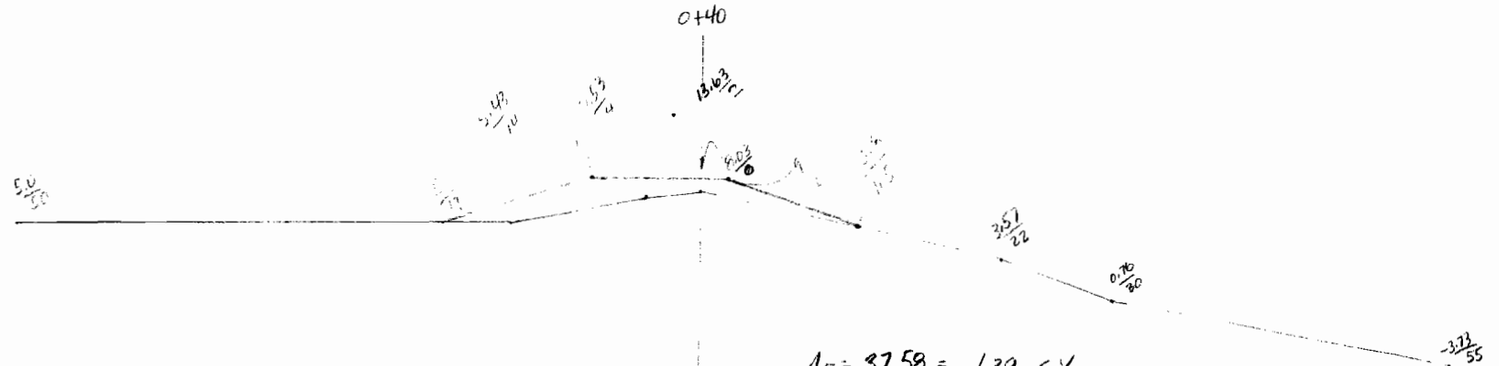
West

0+40



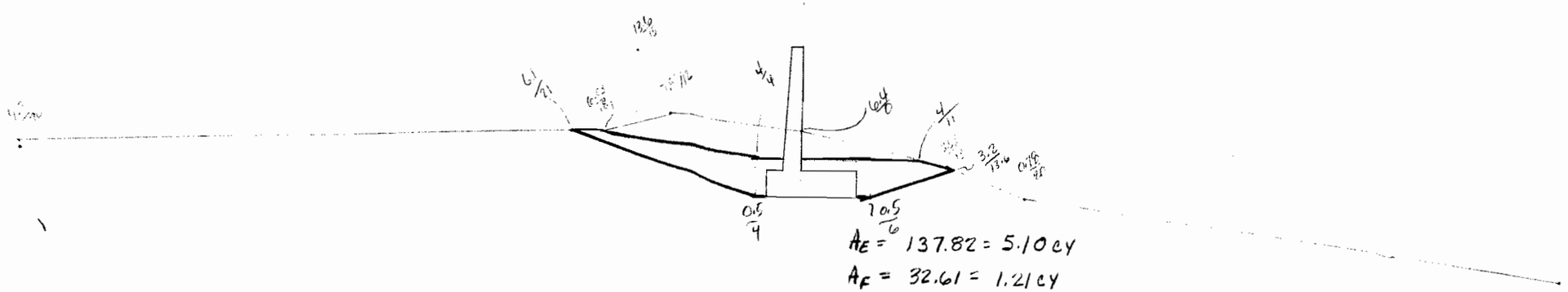
$A_F = 73.14 = 2.71 cy$

0+40



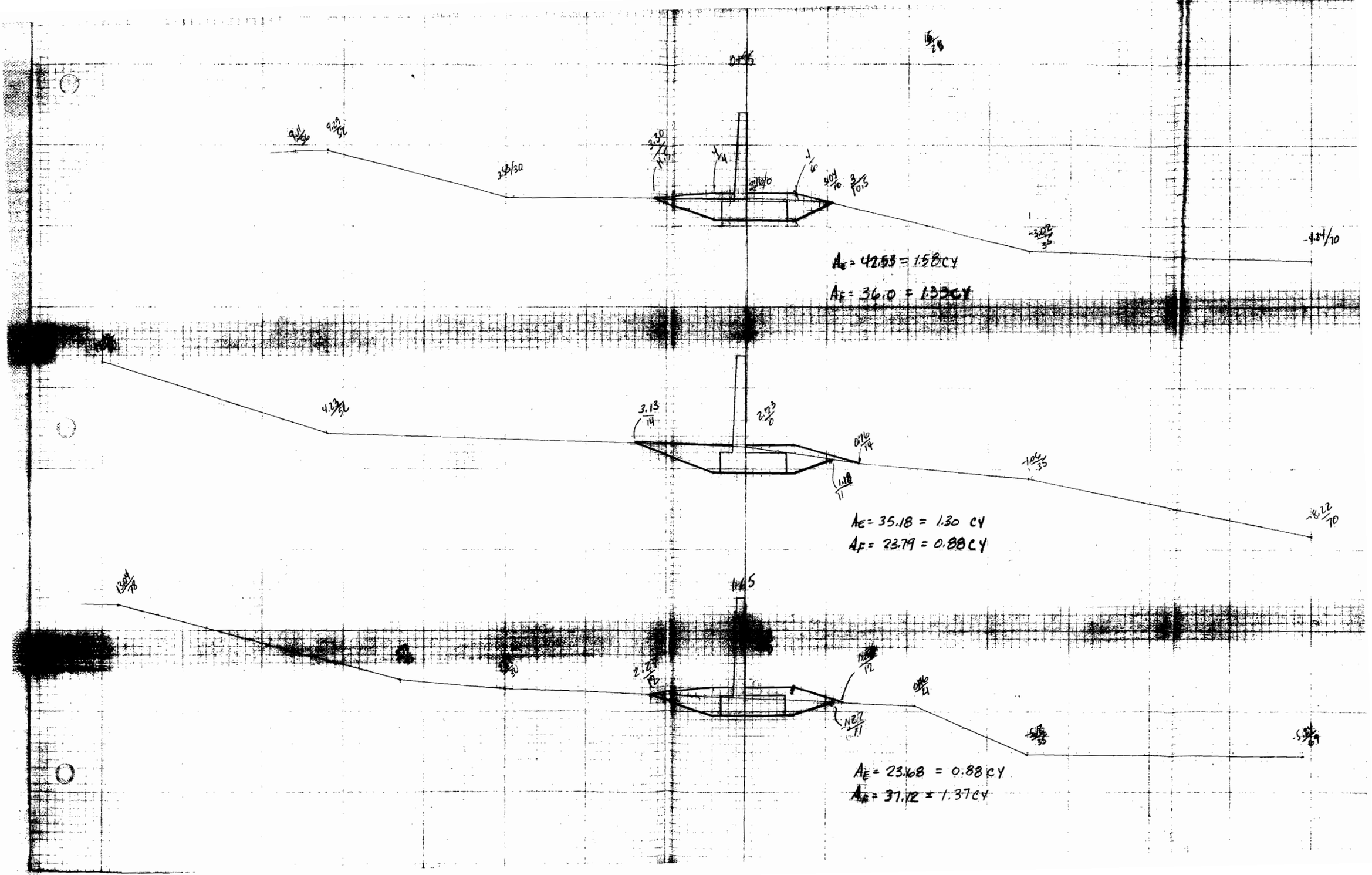
$A_F = 37.58 = 1.39 cy$

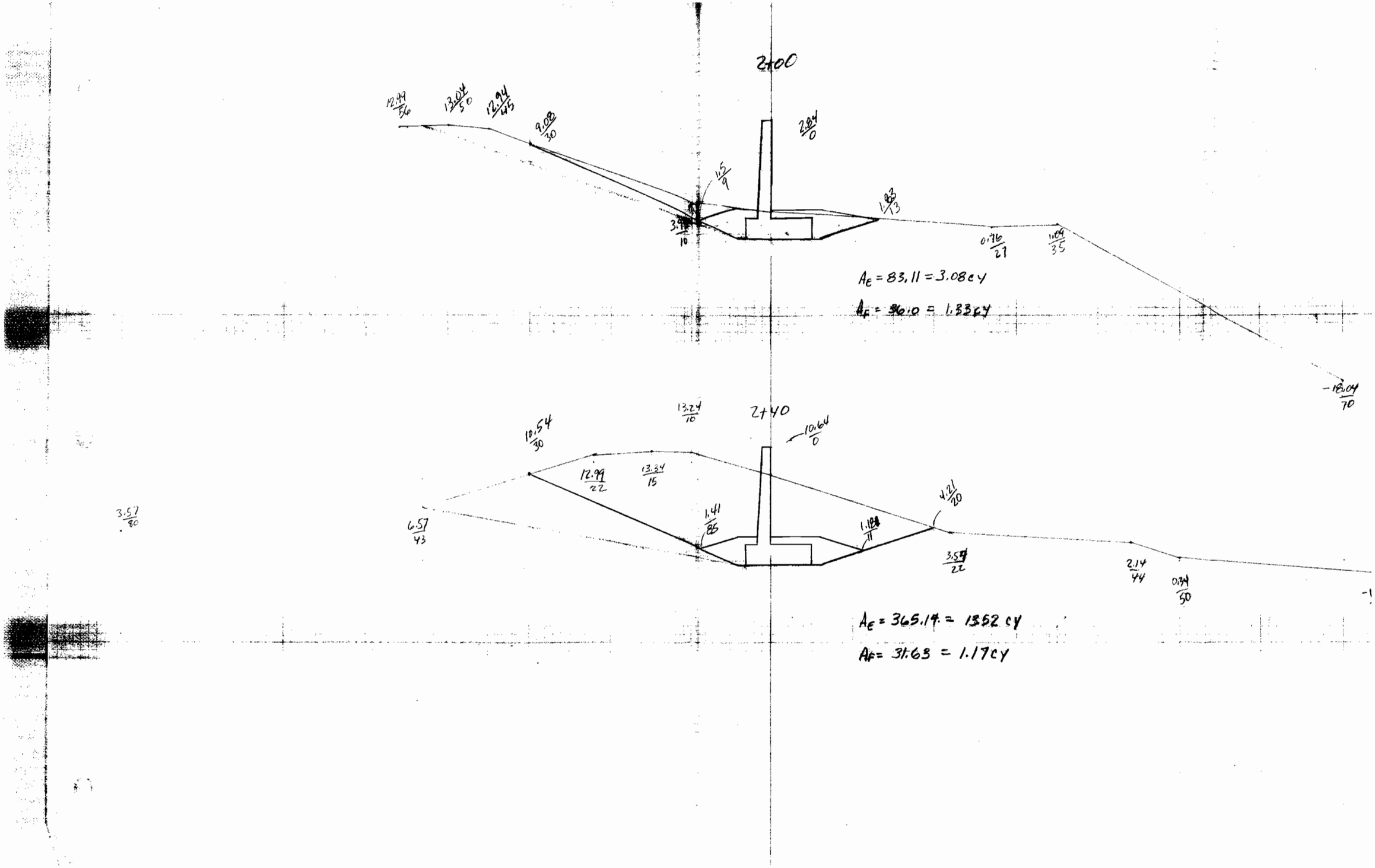
0+55

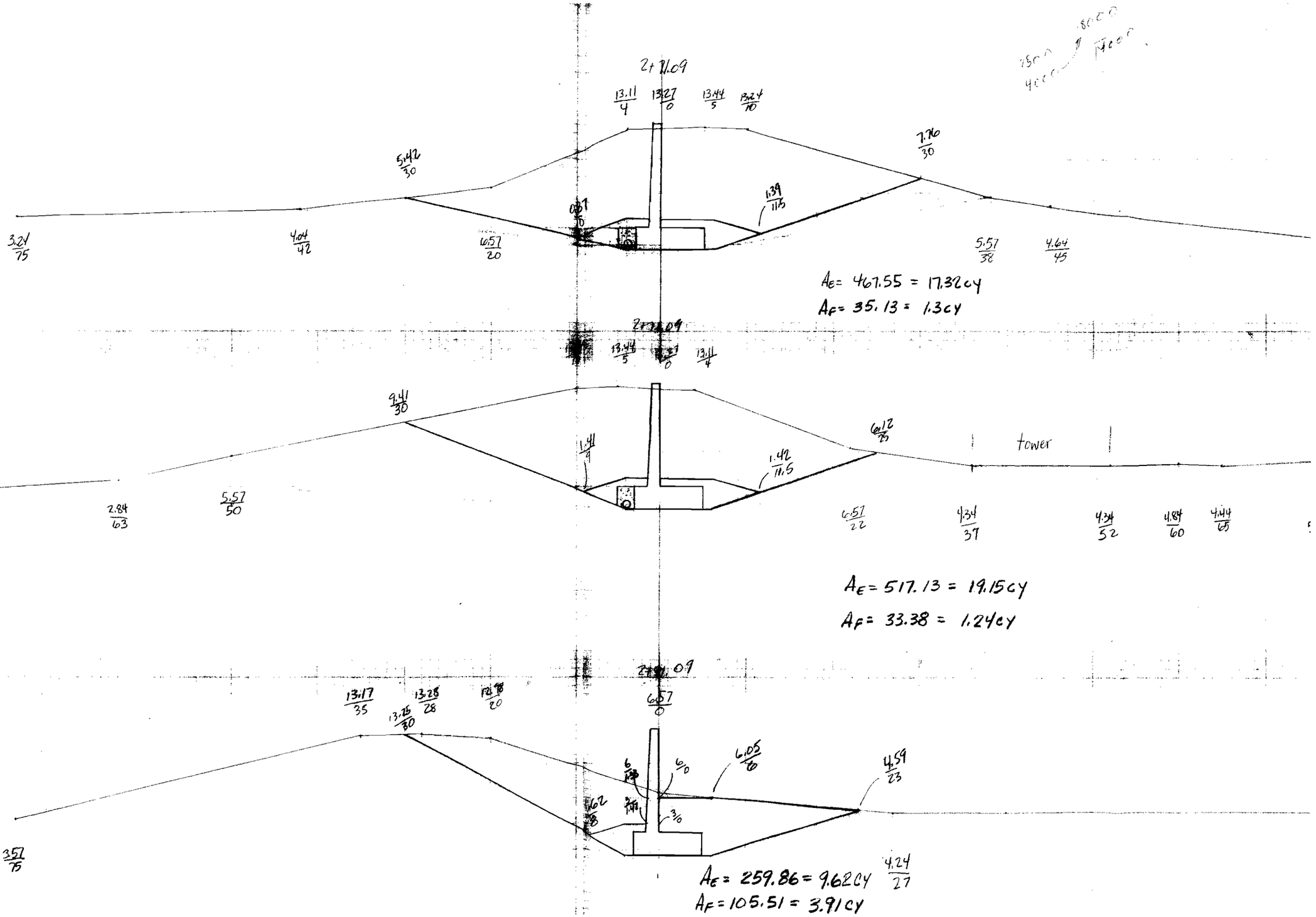


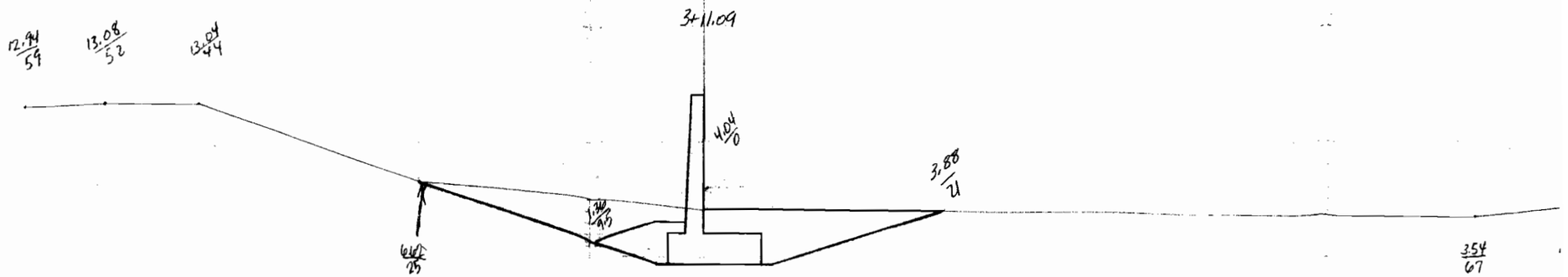
$A_E = 137.82 = 5.10 cy$

$A_F = 32.61 = 1.21 cy$


$A_E = 42.53 = 1.58 CY$
$A_F = 36.0 = 1.33 CY$
$A_E = 35.18 = 1.30 CY$
$A_F = 23.79 = 0.88 CY$
$A_E = 23.68 = 0.88 CY$
$A_F = 37.12 = 1.37 CY$

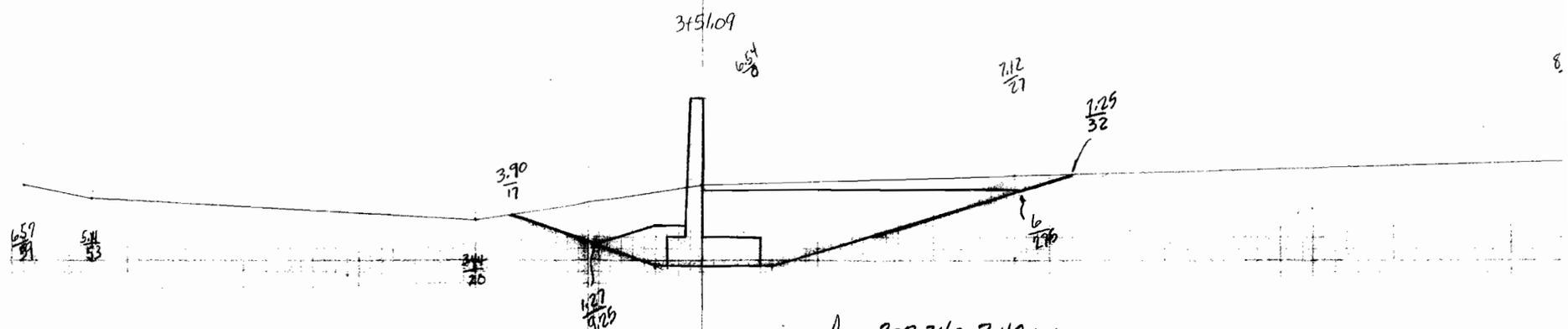

2+00
12.99/56
13.04/50
12.94/45
9.08/30
2.84/0
1.15/9
3.71/10
1.83/13
0.76/27
1.09/35
18.04/70
$A_E = 83.11 = 3.08 cy$
$A_F = 36.10 = 1.33 cy$
2+40
13.24/10
10.54/30
10.64/0
12.99/22
13.34/15
4.21/20
1.41/86
1.18/11
3.57/80
6.57/43
3.57/22
2.14/44
0.34/50
$A_E = 365.14 = 13.52 cy$
$A_F = 31.63 = 1.17 cy$


2+11.09
13.11/4
13.27/0
13.44/5
13.24/10
5.42/30
7.70/30
3.24/75
4.04/42
6.57/20
1.39/11.5
5.57/38
4.64/45
A_E= 467.55 = 17.32cy
A_F= 35.13 = 1.3cy
2+11.09
13.44/5
13.27/0
13.11/4
9.41/30
6.12/25
tower
1.41/9
1.42/11.5
1.84/71
2.84/63
5.57/50
6.57/22
4.34/37
4.34/52
4.84/60
4.44/65
A_E= 517.13 = 19.15cy
A_F= 33.38 = 1.24cy
2+11.09
13.17/35
13.28/28
13.28/20
6.57/0
6.105/10
4.59/23
3.57/75
4.24/27
A_E= 259.86 = 9.62cy
A_F= 105.51 = 3.91cy



$A_E = 131.8 = 4.88\,CY$

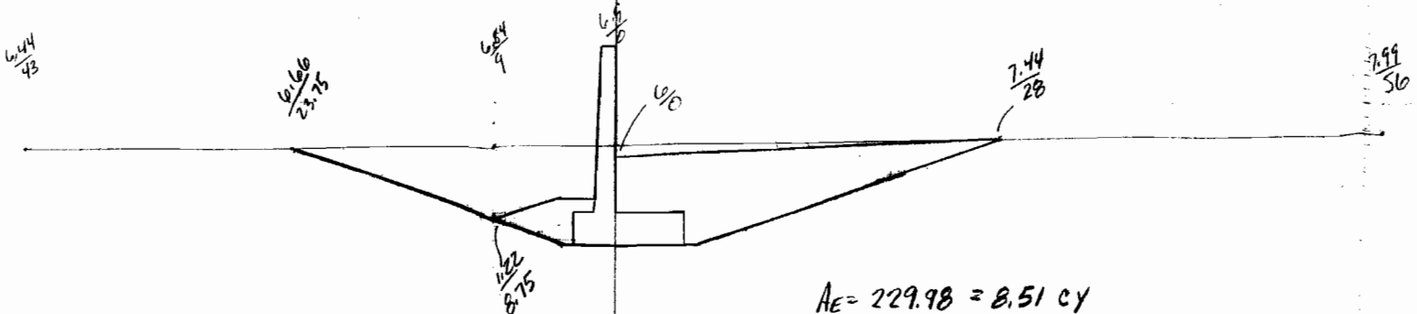
$A_F = 64.38 = 2.38\,CY$



$A_E = 202.34 = 7.49\,CY$

$A_F = 100.85 = 3.74\,CY$

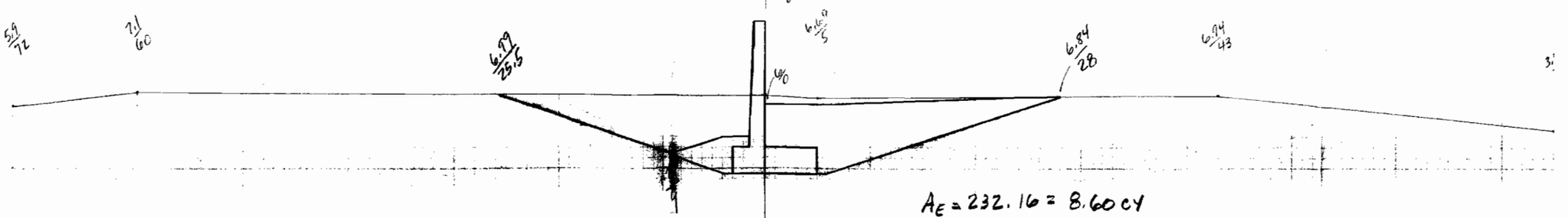
3+45.09



$A_E = 229.98 = 8.51$ CY

$A_F = 117.13 = 4.34$ CY

3+45.09



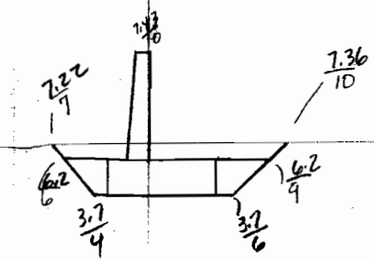
$A_E = 232.16 = 8.60$ CY

$A_F = 115.77 = 4.29$ CY

Harbor Rd Gate

3+80.3

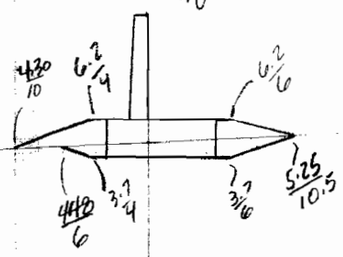
Asphalt Road



$A_E = 49-73 = 1.84$ CY

$A_F = 11.25 = 0.42$ CY

Harbor Rd Gate

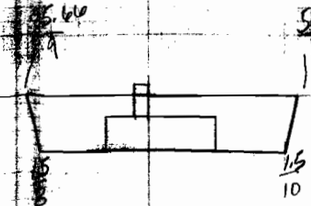


$A_E = 14.87 = 0.55$ CY

$A_F = 16.39 = 0.61$ CY

Railroad Gate

4+53.96



$A_E = 52.39 = 1.94$ CY

$A_F = 32.39 = 1.20$ CY

4+46

5.97/0

5.9/22

5.97/72

5.44/9

6.01/11

1.5/8

1.5/10

$A_E = 85.01 = 3.15$ cy

$A_F = 65.01 = 2.41$ cy

446.00
433.96
12.04

446.46
446.00
14.46

4460.46

-.04/0

-.04/72

5/4

5/6

-.04/22

0.32/22

0.91/40

$A_F = 123.64 = 4.58$ cy

4+60.46

-.04/0

-5.9/14

5.69/23

5.87/16

4.9/10

-8.9/41

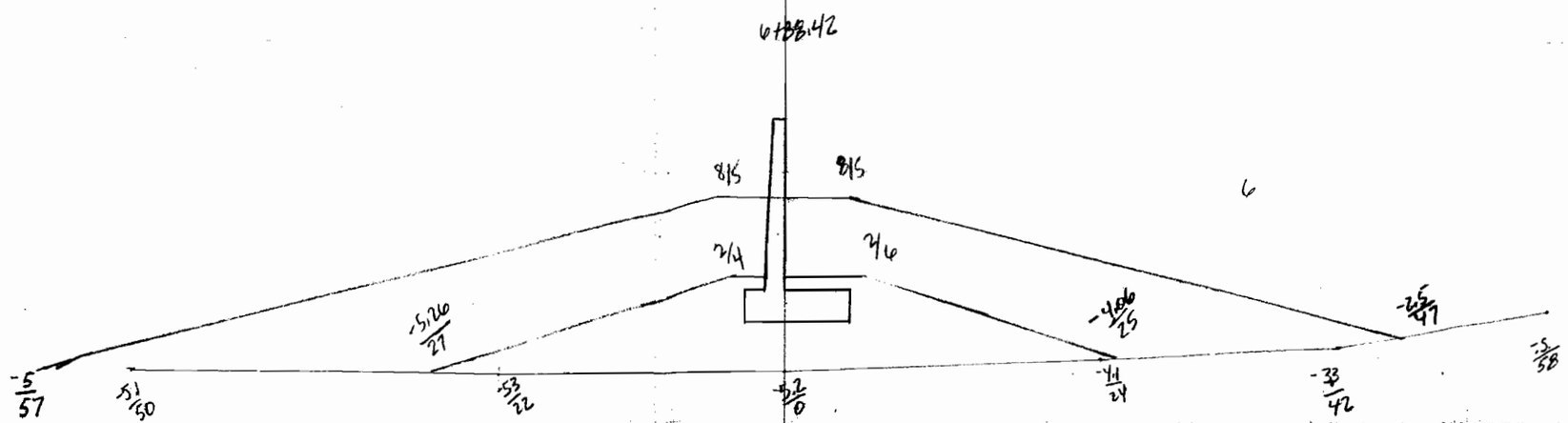
6/3

6/10

5/6

-8/30

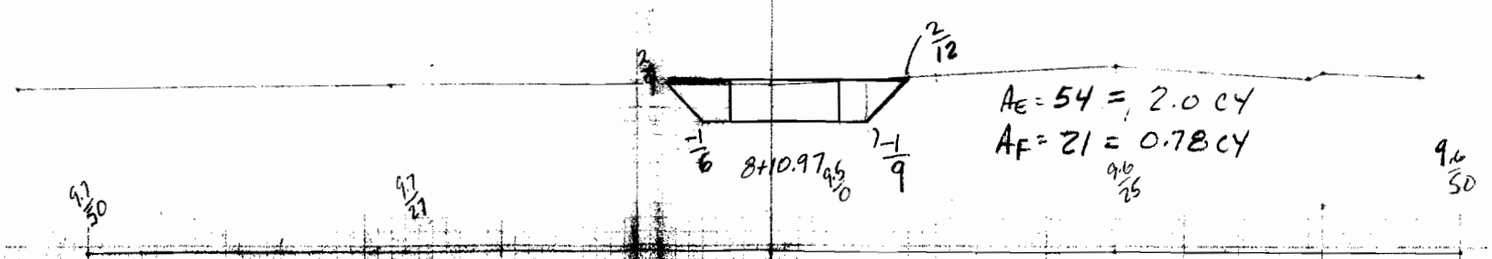
$A_E = 372.45 = 13.79$ cy



$A_F = 341.04 = 12.63$ CY

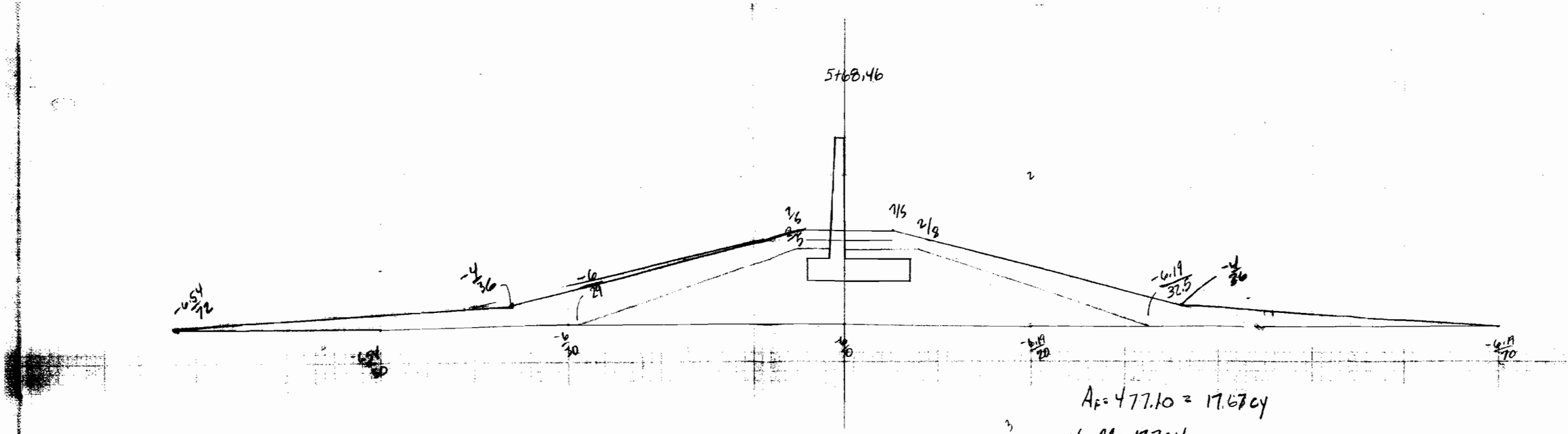
$A_{shell} = 12.6$ CY

7+53.62 ℄ Fla Ave $A_{clay} = 15.7$ CY



$A_E = 54 = 2.0$ CY

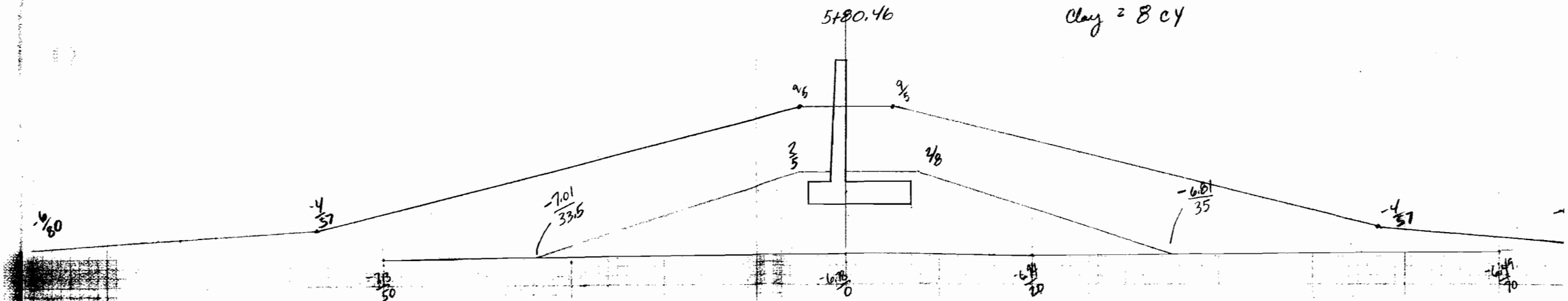
$A_F = 21 = 0.78$ CY



$A_F = 477.10 = 17.67$ cy

shell = 14.7 cy

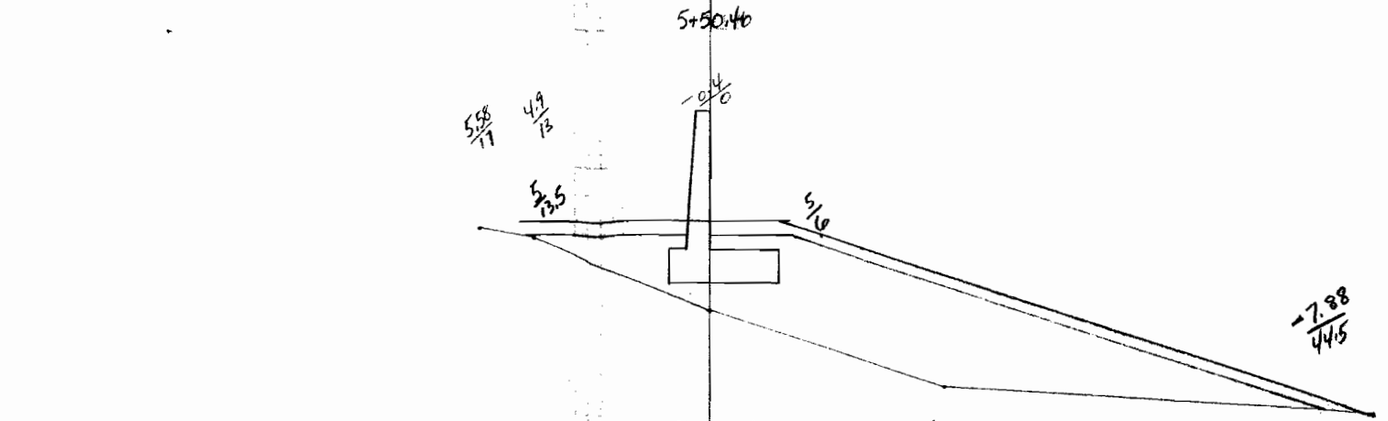
clay = 8 cy



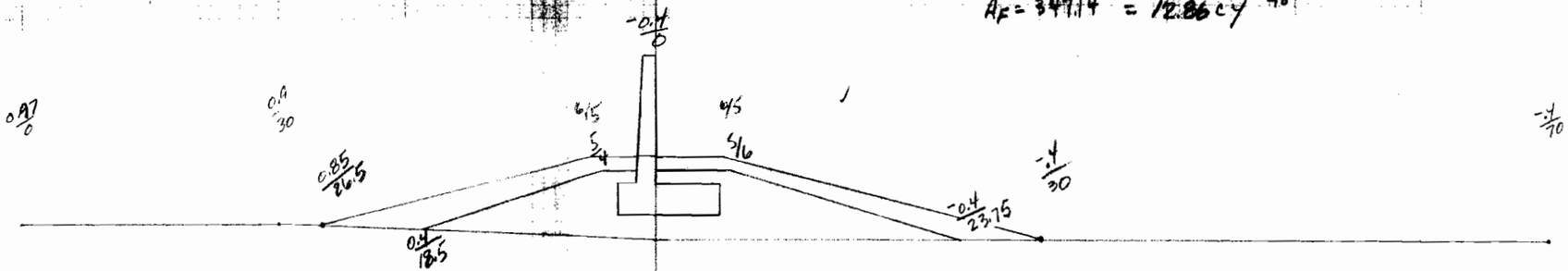
$A_F = 606.14 = 22.45$ cy

shell = 22.5 cy

clay = 22 cy



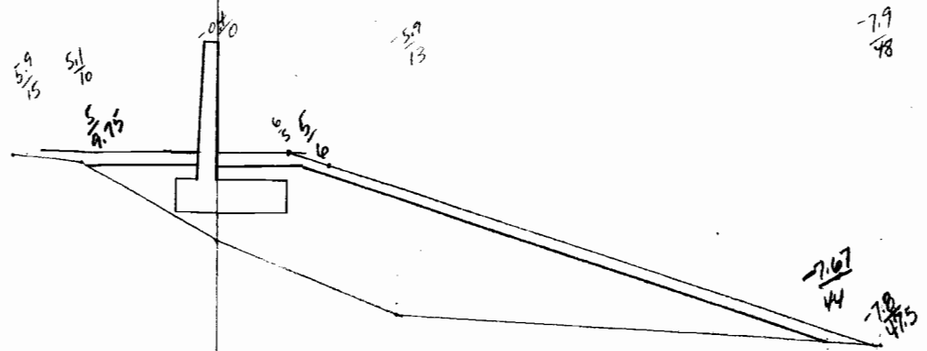
$A_F = 347.14 = 12.86\,cy$



$A_F = 128.97 = 4.77\,cy$

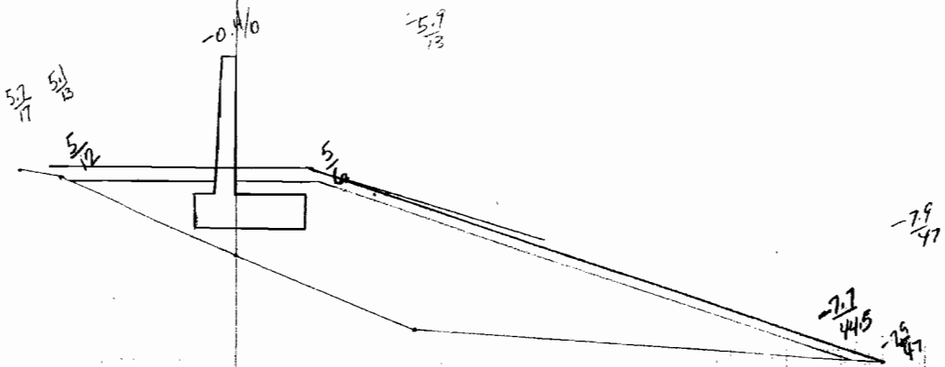
shell = 4.77 cy
clay = 3.00 cy

4+82.46

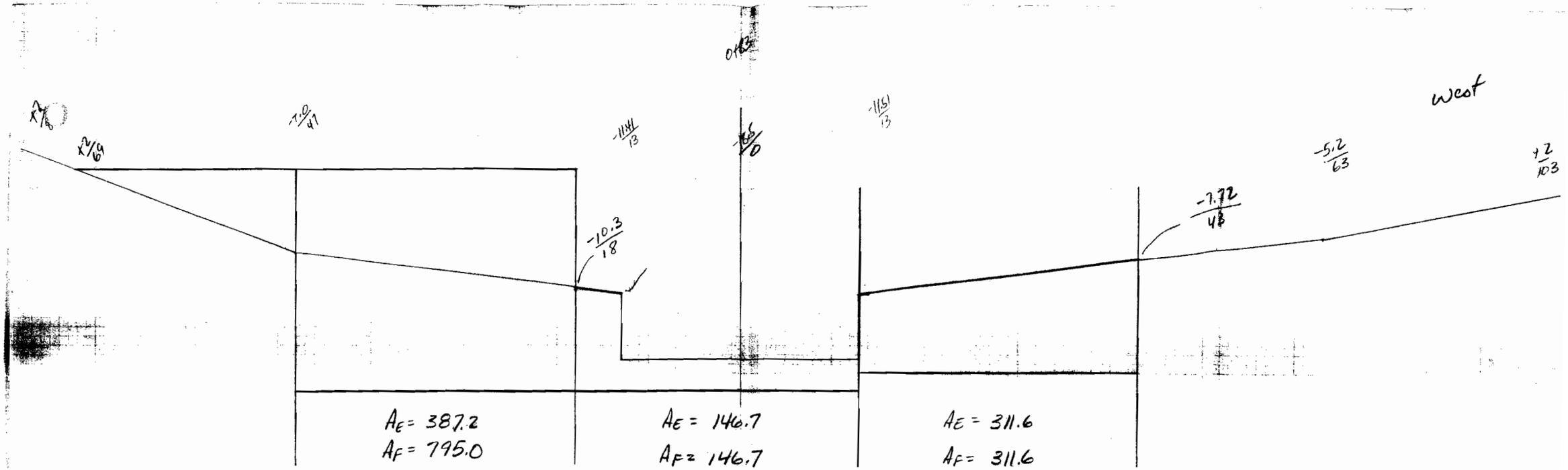


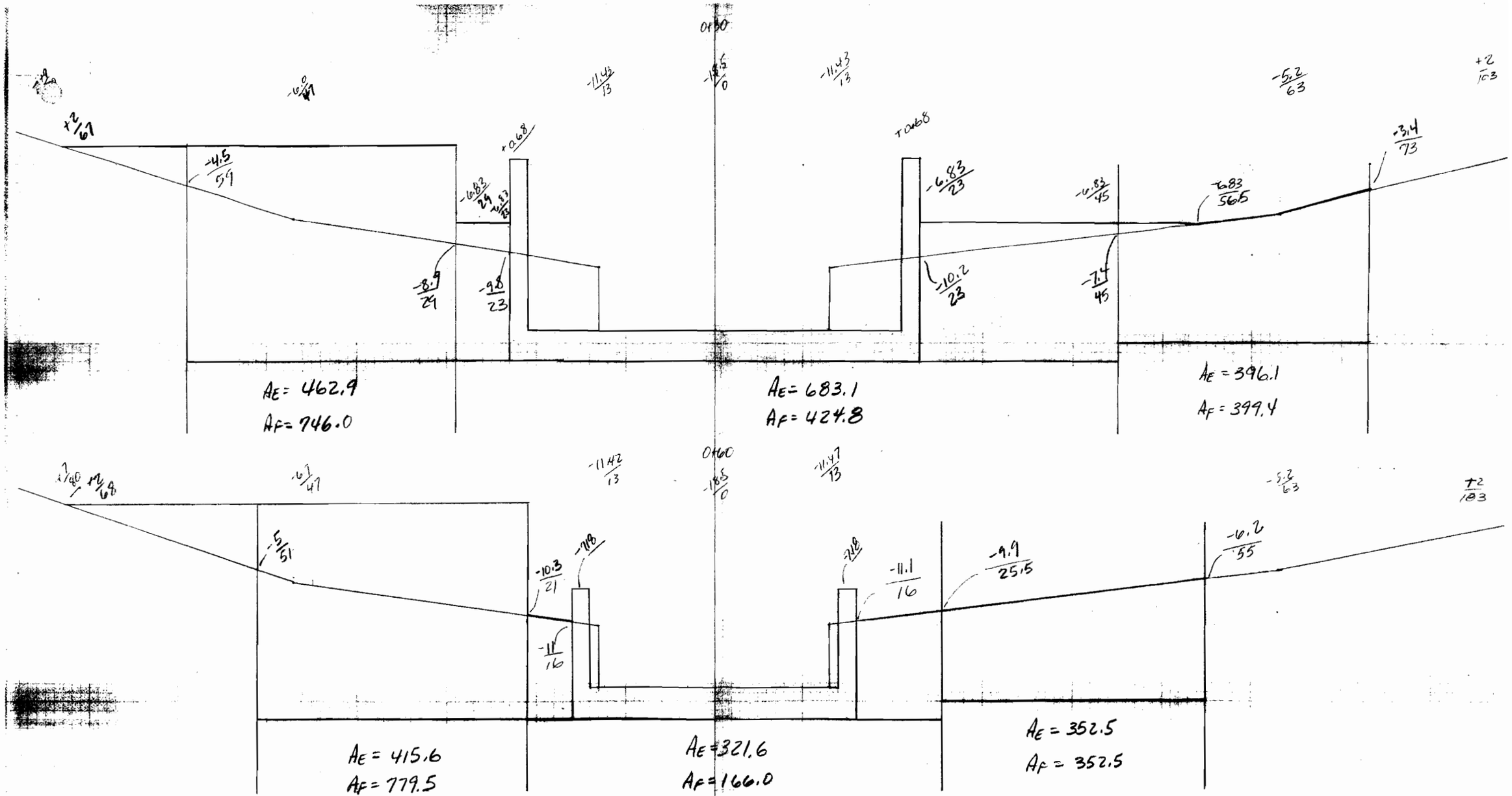
$A_F = 338.34 = 12.53 cy$

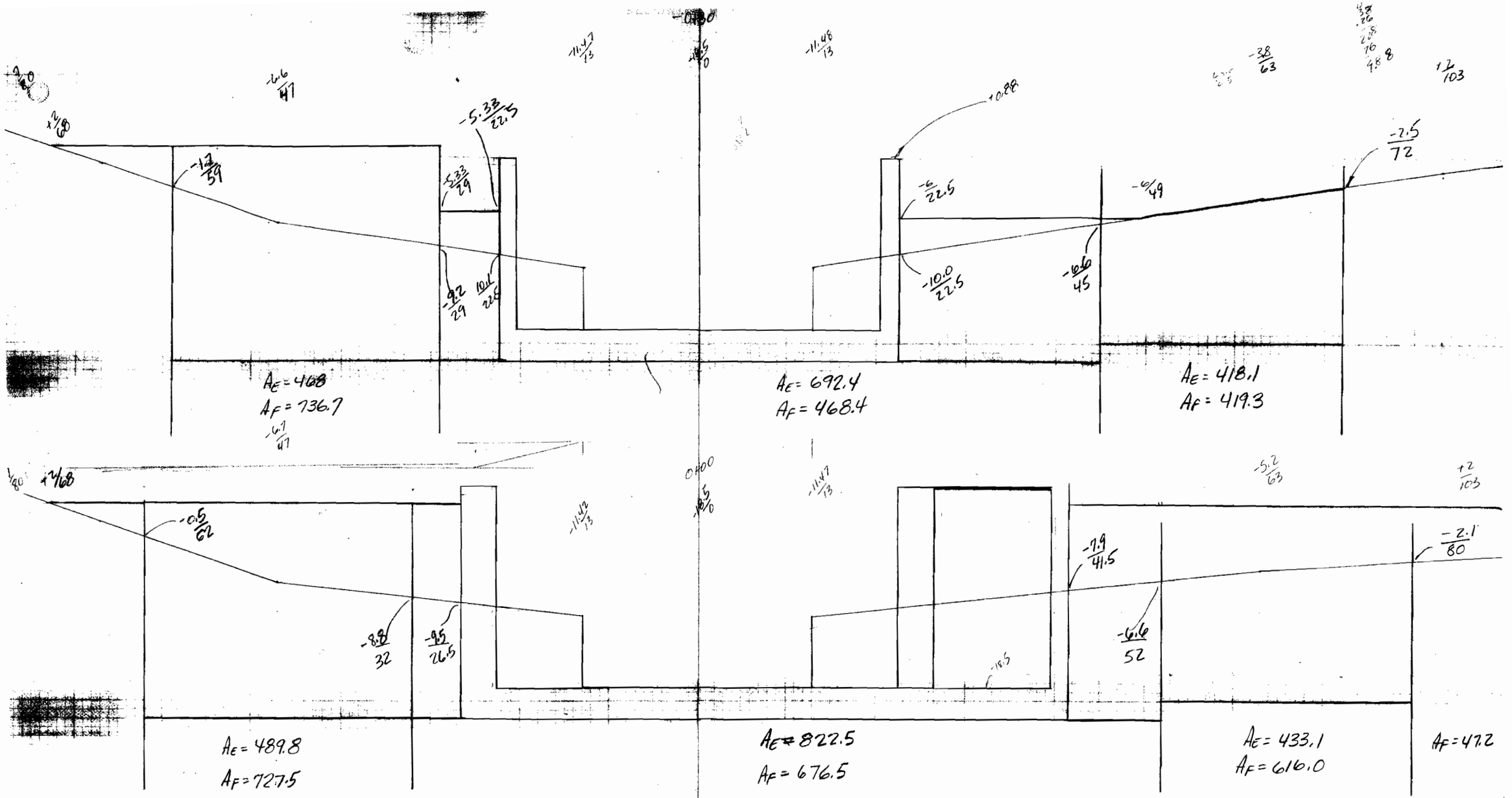
5+32.46

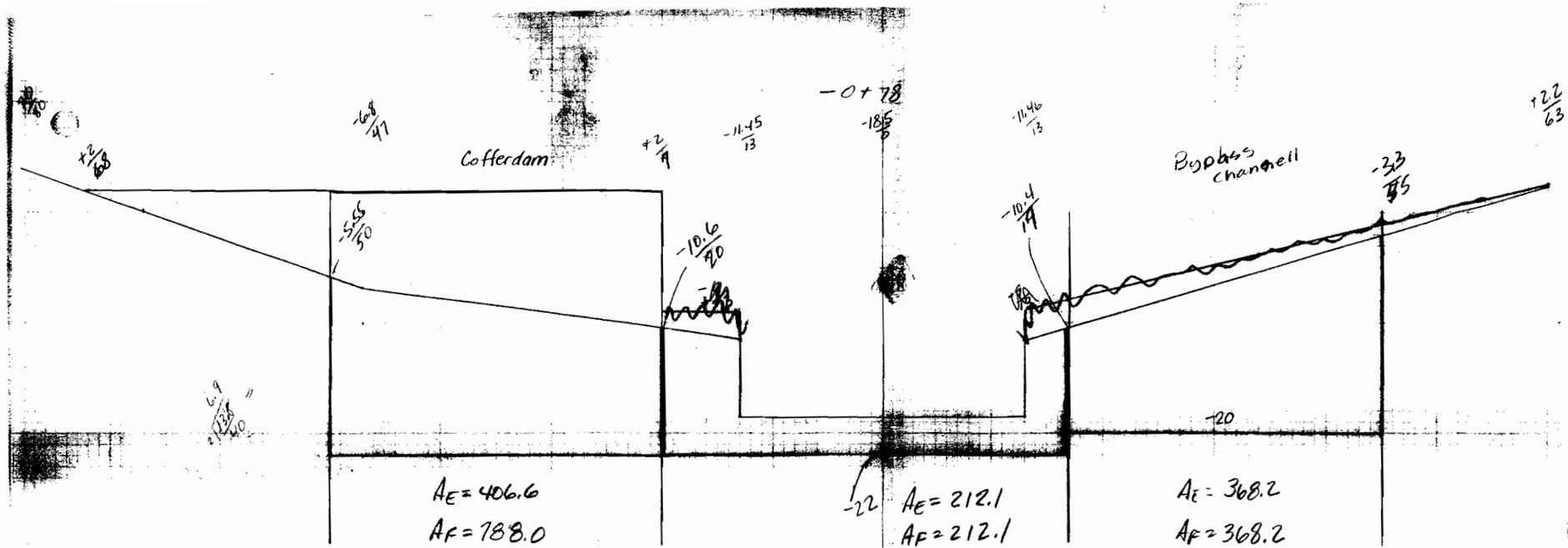


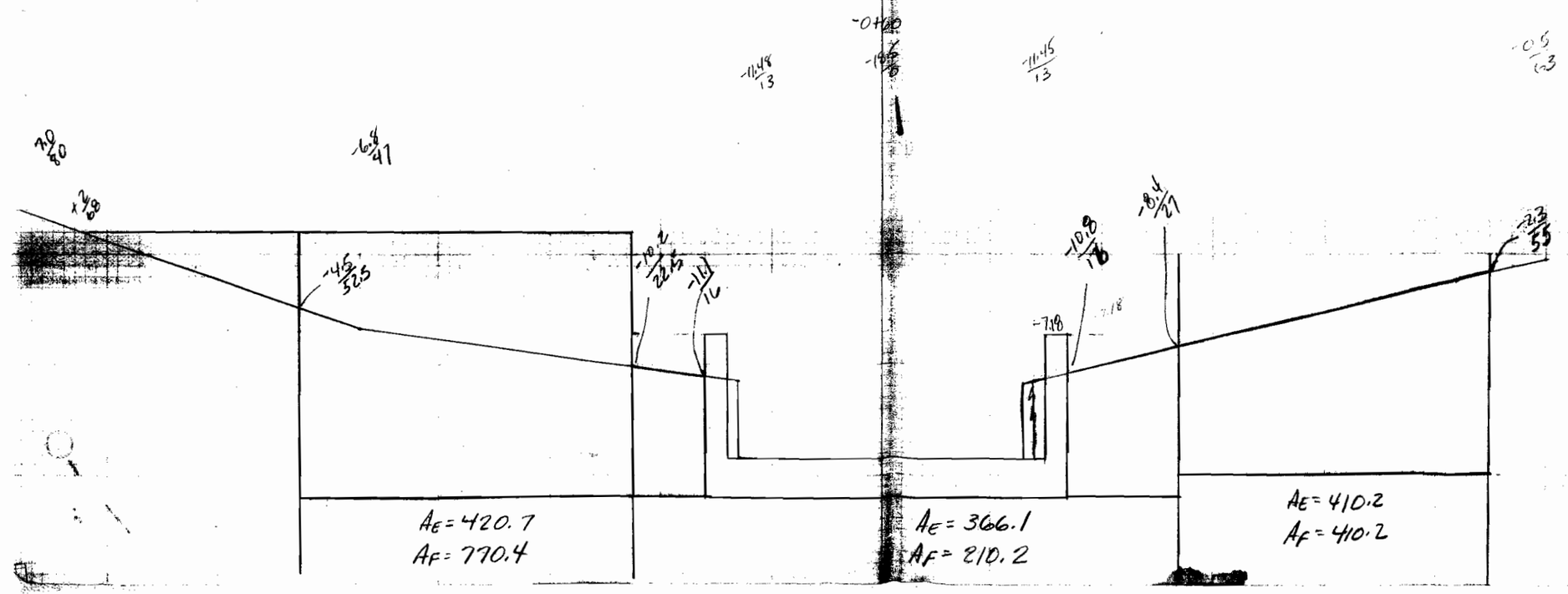
$A_F = 346.13 = 12.82 cy$


west
-10.3/18
-7.72/48
-5.2/63
+2/103
A_E = 387.2
A_F = 795.0
A_E = 146.7
A_F = 146.7
A_E = 311.6
A_F = 311.6


$A_E = 462.9$
$A_F = 746.0$
$A_E = 683.1$
$A_F = 424.8$
$A_E = 396.1$
$A_F = 399.4$
$A_E = 415.6$
$A_F = 779.5$
$A_E = 321.6$
$A_F = 166.0$
$A_E = 352.5$
$A_F = 352.5$


$A_E = 468$
$A_F = 736.7$
$A_E = 692.4$
$A_F = 468.4$
$A_E = 418.1$
$A_F = 419.3$
$A_E = 489.8$
$A_F = 727.5$
$A_E = 822.5$
$A_F = 676.5$
$A_E = 433.1$
$A_F = 616.0$
$A_F = 47.2$


0+78
Cofferdam
Bypass channel
$A_E = 406.6$
$A_F = 788.0$
$A_E = 212.1$
$A_F = 212.1$
$A_E = 368.2$
$A_F = 368.2$


0+80
$A_E = 420.7$
$A_F = 770.4$
$A_E = 366.1$
$A_F = 210.2$
$A_E = 410.2$
$A_F = 410.2$

~~REASONABLE CONTRACT~~ ESTIMATE

SHEET OF

PROJECT Vertical Lift Gate Structure ~~West~~ East

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete:				
	Base Slab (-24 to El-18.5)	300	CY		
	Walls (El-18.5 to El+2)	251	CY		
	Deck Slab (El 2 to El 4.0)	91	CY		
	Walls (El 2 to El 27)	147	CY		
	Floodwalls (El 2 to El 14)	23	CY		
	Stairs	4.0	CY		
	Machine Rm Slab	64	CY		
	Machine Rm Walls	41	CY		
	Roof Slab (El. 40)	17	CY		
	Cement:	4650	CWT		
	Machinery (Hoists-Gate)		2EA		
	Lighting		L.S.		
	Railing				
	Protective Sealing		L.S.		
	Cathodic Protection		L.S.		
	Structural Steel:				
	Embedded	21300	lb		
	Exposed	7014O	lb		
	Gates	72600	lb		
	Reinforcement	181700	lb		
	Concrete Prestressed Piles 14x14	6000	lf		
	Miscellaneous		L.S.		
	Steel Sheet Piling, PZ-27	12320	sf		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O—282-433

~~REASONABLE CONTRACT~~ ESTIMATE					SHEET OF
PROJECT East Approach Str – East					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete	—	—		
	Stabilization Slab	25	CY		
	Base Slab	245	CY		
	Walls	85	CY		
	Cement	1820	cwt		
	Concrete Prestressed Piling 14x14	850	LF		
	Reinforcement	40900	lb		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

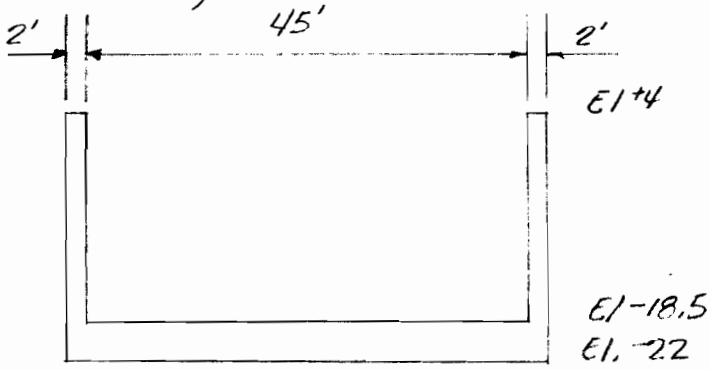
GPO : 1967 OF—262-653

PROJECT		COMPUTED BY	DATE
Florida Avenue Complex	Page — of —	RJGr	8 Sep 76
SUBJECT		CHECKED BY	DATE
Expansion Joint Filler			

East Approach Structures –

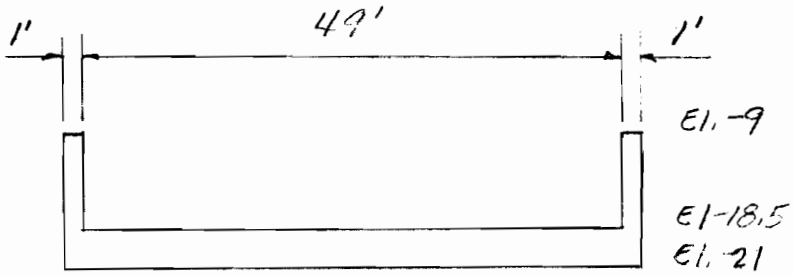
Expansion Joint Filler

East - West,



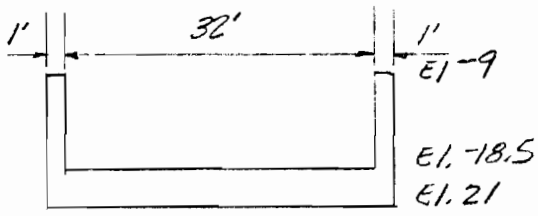
$A = 2[2(2 \times 26) + 45(2.5)] = 523$ sf

East -



$A = 2(12) + 49(2.5) = 146.5$ sf

West -



$A = 2(02) + 32(2.5) = 104.0$ sf

Total Area = 773.5 sf (Use 775 sf)

PROJECT Florida Avenue Complex	Page __ of __	COMPUTED BY RJgr	DATE 8 Sep 76
SUBJECT Waterstops		CHECKED BY	DATE

East Approach Structures-

Bulb-Type Waterstop, East-West

$L = 2[2(22+1.75) + 47] = 189$ lf

(Use 200 lf)

L-Type Waterstops, East

$L = 50 + 2(9.5 + 1.25) = 71.5$ lf

West –

$L = 33' + 2(9.5+1.25) = 54.5$

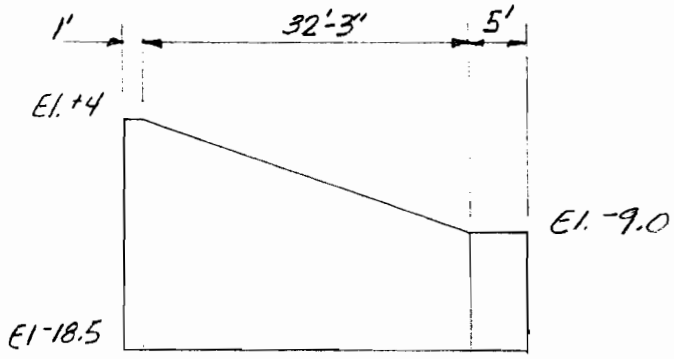
Total, L-Type Waterstop = 126 lf

(Use 130 lf)

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page __ of __		RJGr	9 Sep 76
SUBJECT Sackrub Finish			CHECKED BY	DATE

East Approach Structures
Sackrub Finish

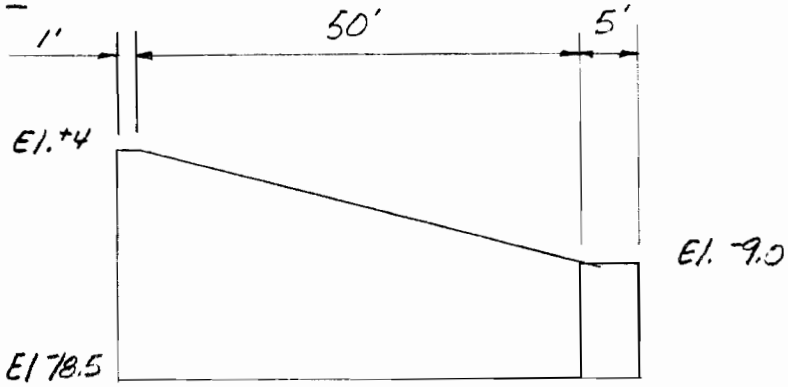
East –



$A = 2[(1' \times 22.5') + \frac{1}{2}(22.5 + 9.5)32.25 + (5' \times 9.5')]$

$= 1172\ sf$

West –



$A = 2[(1' \times 22.5') + \frac{1}{2}(22.5 + 9.5)50 + (5 \times 9.5)]$

$= 1740\ sf$

Total = 2912 sf

(Use 2950 sf)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJG	DATE 9 Sep 76
SUBJECT	Cofferdam – Sheet Piling		CHECKED BY	DATE

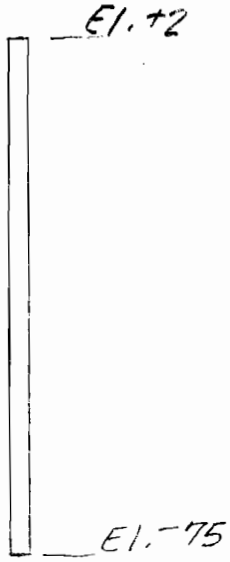
East

Cofferdam System,

Cell perimeter = 95.03'/cell

Intermediate cell length = 32.52'/cell

5 cells, 4 intermediate cells



$A = 5(75.03)(77) + 4(32.52)(77)$

$= 46602.71 \text{ sf}$

(Use 46650 sf)

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 9 Sep 76
SUBJECT	Sackrub - T-Wall, I-Wall		CHECKED BY	DATE

Sackrub Finish - East T-Wall, I-Wall, etc.

W/L sta 0+00 to [illegible],

$A = 6' \times 60' \times 2 = 720\ sf$

W/L sta 0+60 to W/L sta 1+40.35

$A = 80.35' \times 10' \times 2 = 1607\ sf$

W/L sta 1+40.35 to W/L sta 1+79.50,

$A = 39.15' \times 14' \times 2 = 1096.2\ sf$

Overhead Keller Gate,

Wall area = $41.5' \times 14.0' \times 2 = 1162.0$

Column Area = $(11' \times 22.5' \times 2) + (9' \times 22.5')$

$= 697.5\ sf$

Beam Area = $11' \times 70' = 770\ sf$

W/L sta. 2+62.5 to w/L sta 4+73.81,

$A = 17' \times 211.31' \times 2 = 7184.54\ sf$

PROJECT Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 10 Sep 76
SUBJECT Sackrub Finish -		CHECKED BY	DATE

Sackrub finish, (East)

W/L sta. 5+40.31 to W/L sta. 5+77.49,

A = 37.18' x 17' x 2 = 1264.12 sf

W/L sta 5+77.49 to W/L sta 5+94.99,

A = 14.' x 17.5' x 2 = 490 sf

Swing Gate,

Wall Area = 2[illegible]' x [illegible]' x 2 = 399 sf

Column Area = 8' x 10.5' x 2 = 168 sf

W/L sta. 6+40.49 to W/L sta 6+50.49,

A = 10' x 9.5 x 2 = 190 sf

W/L sta 6+50.49 to W/L sta 8+77,

A. = 7' x 226.51' x 2 = 3171.14 sf

Total Area = 18919.5 sf
(Use 18950 sf)

LMV FORM 1 AUG 68 107a COMPUTATION SHEET

PROJECT	Page — of —	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	10 Sept 16
SUBJECT		CHECKED BY	DATE
Gate Seals			

Overhead Roller Gate - Fla. Ave. Complex (East)

Gate Seals,

Gate height = 14'-0"

Gate width = 36'-0"

∴ Length = 28 + 36 = 64'

Swing Gate - Flo Ave. Complex (East)

Gate height = 6.58'

Gate width = 21'

Length = 21 + (6.58)2 = 34.16'

Total Length = 98.16'

(Use 100 ef)

PROJECT			COMPUTED BY	DATE
Florida Avenue Complex	Page — of —		RJ9r	10Sep 76
SUBJECT East Approach Structure - Concrete, Cement.			CHECKED BY	DATE

Concrete -

East Approach Structure:

Base Slab = $982.53^{K} / (4.05\ ^{K}/_{CY})$

= 242.6 CY (Use 245 CY)

Stabilization Slab = $\left[\left(\frac{4'}{12}\right)\frac{982.53^{K}}{3.5'}\right] / (4.05\ ^{K}/_{CY})$

= 23.1 CY (Use 25 CY)

Walls = $342.96^{K} / (4.05\ ^{K}/_{CY})$

= 84.68 CY (Use 85 CY)

Cement = $350.38\ CY \times 5.17 \frac{CY}{cwt}$

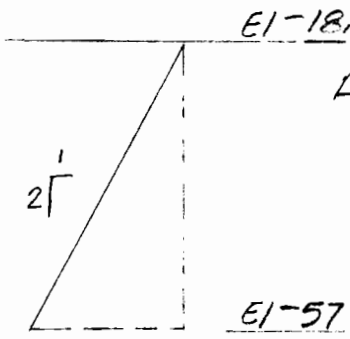
= 1811.5 cwt (Use 1820 cwt)

PROJECT		COMPUTED BY	DATE
Florida Avenue Complex		RJGr	10Sep76
SUBJECT		CHECKED BY	DATE
Concrete Piling			

Concrete Prestressed Piling - (14"x14")

No. Battered Piles = 0

No. Vertical Piles = 22



$\Delta_{Elev} = 38.5'$

$Length = \Delta_{Elev}\sqrt{1+1/n^2}$

$= 43.04'$

$\therefore$ Length = 38.5 x 22' = 847 lf

(Use 850 lf)

PROJECT		COMPUTED BY	DATE
Florida Avenue Complex		RJ9r	10 Sep 76
SUBJECT		CHECKED BY	DATE
Reinforcement			

Reinforcement -

#7 - 105 X 37.25' X 2.044 = 7995
74 X 53' X 2.044 = 8017
37 x 37.25' X 2.044 = 2817
44X 22.5' X 2.044 = 2024

#8 - 74 X 53' X 2.67 = 10472
9 X 10' X 2.67 = 240
14 X 10' X 2.67 = 374
51 X 17.25' X 2.67 = 2349

#9 - 52 X 37.25' X 3.4 = 6586

Total = 40874 lb

(Use 40900 lb)

~~REASONABLE CONTRACT~~ ESTIMATE					SHEET OF
PROJECT West Approach Structure					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete	—	—		
	Stabilization Slab	60	CY		
	Base Slab	600	CY		
	Walls	130	CY		
	Cement	4060	cwt		
	Concrete Prestressed Piling 14"x14"	1750	Lf		
	Reinforcement	65300	lb		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-262-633

PROJECT Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 10 Sep 76
SUBJECT Concrete Piling		CHECKED BY	DATE

Concrete Prestressed Piling - (14" x 14")

No. Battered Piles = 10

No. Vertical Piles = 34

Length, Battered Piling = $\Delta_{Elev}\sqrt{1+1/n^2}$

Δ_{Elev} = 38.5'

$n = 2$

$\therefore$ Length = 43.04', use 44'

Total Length = (44' x 10) + 34x(38.5')

= 1749 l.f.

(Use 1750 l.f.)

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	10Sep76
SUBJECT: Concrete, Cement		CHECKED BY	DATE

Concrete -

West Approach Structure:

Stabilization Slab = $(\frac{4}{12})(1213.53)/(3.5)(4.05)$

= 57.07 cy (Use 60cy)

Base Slab = 1213.53 k/(4.05 k/cy)

= 599.27 cy (Use 600cy)

Walls = 517.2 k/(4.05 k/cy)

= 127.70 cy (Use 130 cy)

Cement = 784.04 x 5.17

= 4053.49 cwt

(Use 4060 cwt)

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 10 Sep 76
SUBJECT	Reinforcement		CHECKED BY	DATE

Reinforcement -

#7 - 97 x 49' x 2.044 = 9715
44 x 22.5' x 2.044 = 2024

#8 - 19 x 20' x 2.67 = 1015

#9 - 38 x 8' x 3.4 = 1036
114 x 33' x 3.4 = 12791
63 x 14' x 3.4 = 2999
48 x 55' x 3.4 = 8976
32 x 10' x 3.4 = 1088
44 x 15' x 3.4 = 2244
54 x 54' x 3.4 = 9914

#10 - 64 x 49' x 4.303 = 13494

Total = 65296 lb

(Use 65300 lb)

~~REASONABLE CONTRACT~~ ESTIMATE

SHEET OF

PROJECT I-Wall, Lock

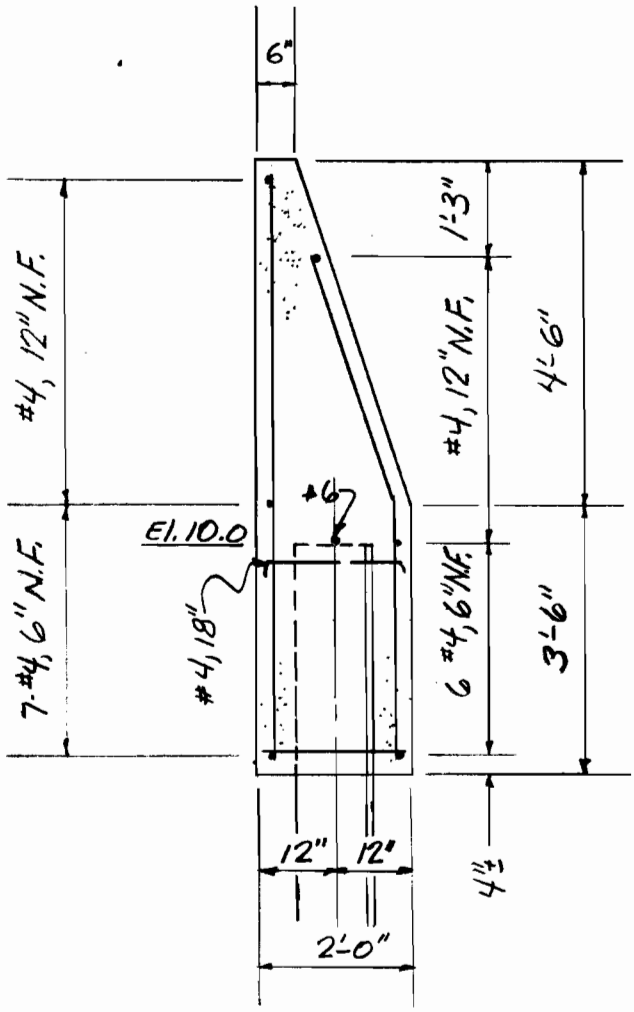
INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete	150	cy		
	Reinforcement	4570	lb		
	Steel Sheet Piling, PZ-27	9450	sf		
	Cement	770	cwt		
	Waterstops, L-type	45	ef		
	Waterstops, 3-bulb type	80	ef		
	Expansion Joint Material	155	sf		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-262-683

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY	DATE
			RJGr	11Sep 76
SUBJECT	I-Wall Quantities		CHECKED BY	DATE



Total Length = 292'

Concrete:

Volume = (13.75 x 292)/27

= 148.7 CY (Use 150cy)

Cement:

Volume = 148.7 x 5.17

= 768.77 cwt)

(Use 770cwt)

Reinforcement:

Wt = 15.64 #/1 x 292'

= 4567.2 lb.

(Use 4570 lb.)

Steel Sheet Piling; Total = 9432 sf (Use 9450 sf)

W/L sta. 0+00 to W/L sta. 0+60;

A = 60' x 18' = 1080 sf

W/L sta 6+45 to W/L sta. 8+77;

A = 232' x 36' = 8352.0 sf

PROJECT	Fla Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 11 Sep 76
SUBJECT	I-Wall: Waterstops, Expansion Jt. Matt.		CHECKED BY	DATE

Waterstops, L-type ~

W/L sta 0+60: L = 13.5'

W/L sta 6+45, W/L sta 8+77: L = 2 x 14 = 28

Total = 41.5' (Use 45')

Waterstops, 3-bulb type ~

W/L sta 0+00 to W/L sta 0+60: L = 2 x 8' = 16'

W/L sta 6+45 to W/L sta 8+77: L = 9' x 7 = 63

Total = 79'

(Use 80')

Expansion joint Material:

A = 13.75 x 11 = 151.25 sf (Use 155 sf)

~~REASONABLE CONTRACT~~ ESTIMATE					SHEET OF
PROJECT T-Wall, East					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete	—	—		
	Stabilization Slab	51	CY		
	Base Slab	420	CY		
	Walls	80	CY		
	Cement	2840	cwt		
	Reinforcement	350000	lb		
	Waterstops	390	ef		
	Construction Joint Matl	670	sf		
	Concrete Prestressed Piling	11013	lf		
	Steel Sheet Piling PMA-22	6500	sf		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OP—262-653

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY	DATE
			RJGr	11 Sep
SUBJECT	Reinforcement		CHECKED BY	DATE

Wall

Monolith			Transverse		Longitudinal	Vertical		Horizontal
No	L	W	Top	Bottom	Top & Bottom	F.S.	B.S.	F.S. & B.S.
3	31.0	8'	#8,12	#8,12	9-#6	#7,12	#6,12	#5,12
4	39.54'	8'	#8,12	#8,12	15-#6	#7,12	#6,12	#5,12
5	21.0	8'	#8,12	#8,12	9-#6	#7,12	#6,12	#5,12
6	39.15'	11'	#9,12	#8,12	21-#6	1/2 #7,6 1/2 #7,12	#6,12	#5,12
8	14.63'	11'	#8,6	#8,12	21-#6	1/2 #7,6 1/2 #7,12	#6,12	#5,12
9	42.78'	11'	#8,6	#8,12	21-#6	#9,6.	#6,12	#5,12
10	45.0	11'	#8,6	#8,12	12-#6	#9,6	#6,12	#5,12
11	44.0'	14'	#9,6	#8,12	15-#6	#9,6	#6,12	#5,12
12	21.91'	14'	#9,6	#8,12	27-#6	#9,6	#6,12	#5,12
13	44'	14'	#9,6	#8,12	15-#6	#9,6	#6,12	#5,12
15	37.18'	11'	#9,12	#8,12	21-#6	#9,6	#6,12	#5,12
16	17.5'	8'	#8,12	#8,12	15-#6	#7,12	#6,12	#5,12
18	10'	8'	#8,12	#8,12	15-#6	#7,12	#6,12	#5,12

PROJECT Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 11 Sep 76
SUBJECT Reinforcement		CHECKED BY	DATE

Total = 363,344.5 lb. check (Use 365 000 lb)

#5 - 20 x 91.54' x 1.043 = 1909.5
28 x 39.15' x 1.043 = 1143.3
34 x 250' x 1.043 = 8865.5
28 x 17.5' x 1.043 = 511.1
19 x 10' x 1.043 = 198.2 - 12677.6

#6 - 92 x 12.5' x 1.502 = 1727.3
40 x 16.5' x 1.502 = 991.3
250 x 19.5' x 1.502 = 7322.3
18 x 16.5' x 1.502 = 446.1
10 x 12.5' x 1.502 = 187.8
217 x 816' x 1.502 = 265962.1

#7 - 92 x 12.5' x 2.044 = 2350.6 - 291615.1
40 x 24.75' x 2.044 = 2023.6
15 x 29.25' x 2.044 = 896.8
18 x 16.5' x 2.044 = 607.1
10 x 12' x 2.044 = 245.3 - 295387.5

#8 - 119 x 20 x 2.67 = 6354.6
179 x 13 x 2.67 = 6213.1
110 x 16 x 2.67 = 4699.2
205 x 10 x 2.67 = 5473.5

#9 - 110 x 32 x 3.4 = 11968.0
77 x 13 x 3.4 = 3403.4 - 333499.7
231 x 38 x 3.4 = 29845.20

PROJECT Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 11 Sep 76
SUBJECT Concrete		CHECKED BY	DATE

Concrete ~

W/L sta 0+60 to W/L sta 1+40.35:

Stabilization Slab = (4½ x 82.35' x 8')/27 = 8.13 CY

Base Slab = (2.5 x 84.85' x 8)/27 = 62.85 CY

Walls = $82.35\left[\left(\frac{1}{2} \times \frac{10^2}{24}\right) + 1.0\right]/27$ = 9.4 CY

W/L sta 1+40.35 to sta 3+67.90:

Stabilization Slab = (141.55 x 4½ x 11)/27

= 19.22 CY

(Step = 4.89 CY) Base Slab = (141.55 x 2.5 x 11)/27

= 144.17 CY

Walls = $\left[39.15\left[\left(\frac{1}{2} \times \frac{14^2}{24}\right) + 1.0\right] + 104.40\left[\left(\frac{1}{2} \times \frac{16^2}{24}\right) + 1.0\right]\right]/27$

= 31.86 CY

PROJECT Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 11 Sep 76
SUBJECT Concrete		CHECKED BY	DATE

W/L sta 3+67.90 to W/L sta 4+73.81:

Stabilization Slab = (109.91 x 4/12 x 14)/27 = 19.0 CY

Base Slab = (109.91 x 2.5 x 14)/27 = 142.48 CY

Walls = $88\left[\left(1\frac{1}{2} \times \frac{16^2}{24}\right)+1.0\right]/27 +$

$16.91\left[\left(1\frac{1}{2} \times \frac{16^2}{24}\right)+1.0\right]/27$

= 24.61 CY

W/L sta. 5+40.31 to W/L sta. 5+77.49:

Stabilization Slab = $\frac{37.18}{27}(4/12)(11)$ = 1.26 CY

(Step = 3.06 CY) Base Slab = $\frac{37.18}{27}(2.5)(11)$ = 37.87 CY

Walls = $\frac{37.18}{27}\left[\left(1\frac{1}{2} \times \frac{16^2}{24}\right)+1.0\right]$ = 8.72 CY

W/L sta. 5+77.49 to W/L sta 6+50.49:

Stabilization Slab = $\frac{27.5}{27}(4/12)(8)$ = 2.72 CY

(Step = 3.33 CY)

Base Slab = $\frac{27.5}{27}(2.5)(8)$ = 20.37 CY

Wall = $\frac{17.5}{27}\left[\left(\frac{1}{2} \times \frac{14^2}{24}\right)+1.0\right] + \frac{10}{27}\left[\left(\frac{1}{2} \times \frac{9.5^2}{24}\right)+1.0\right]$

= 4.36 CY

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 11Sep76
SUBJECT	Concrete, Cement		CHECKED BY	DATE

Stabilization Slab = 50.33 cy (Use 51 cy)

Base Slab = 419.02 cy (Use 420 cy)

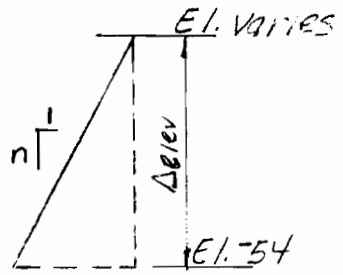
Walls = 78.75 cy (Use 80 cy)

Cement = 548.3 x 5.17 = 2835 cwt

Use 2840 cwt

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 11Sep76
SUBJECT	Concrete Piling		CHECKED BY	DATE

Concrete Prestressed Piling -



$$\text{Pile Length} = \Delta\text{elev}\sqrt{1 + 1/n^2}$$

Monolith	Δelev	No. Piles	Batter	Pile Length	Total
3,4,5	55.5	16	2:1	62'	993'
		6	3:1	58.5'	351'
		2	2.5:1	60'	120'
6	51.5	14	2:1	58'	812'
8,9,10	48.5	59	2:1	54.5'	3215.5'
		2	2.5:1	52.5'	105'
		1	3:1	51.5	51.5'
		2	3.5:1	50.5	101'
11,12,13	48.5	69	2:1	54.5	3760.5'
		1	2.5:1	52.5	52.5
15	48.5	22	2:1	54.5	1199'
18	56.0	4	2:1	63	252'

Total = 11013'

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY	DATE
			RJgr	11Sep76
SUBJECT	Sheet Piling		CHECKED BY	DATE

Steel Sheet Pile, PMA-22~

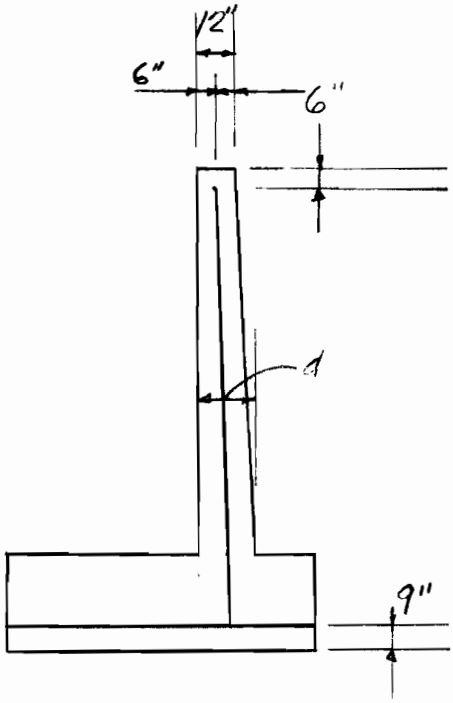
Monolith	Sheet Pile Length, L_P	Δelev	$L_P \times \Delta$elev, sf
3, 4, 5	77.35	21.5	1663.1
6	37.15	17.5	685.1
8, 9, 10, 11, 12, 13	209.31	14.5	3035.0
15	37.18	14.5	539.0
16	17.5	17.5	306.25
18	10	22	220.0

Total = 6448.45

(Use 6500 sf)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY	DATE 11 Sep 76
SUBJECT	T-Wall: Waterstops		CHECKED BY	DATE

Waterstops, 3-Bulb type.



Typical 3-Bulb Waterstop Detail

W/L sta 0+91.0, sta. 1+19.35, sta 1+40.35:

$3L = (11.25' + 8')3 = 57.75'$

W/L sta 1+79.50, sta 2+62.5:

$2L = (15.25 + 11)2 = 52.5'$

W/L sta 2+77.12, sta. 3+22.9, sta 3+67.9:

$3L = (18.25 + 11)3 = 87.75'$

W/L sta 4+11.70, sta. 4+29.81, sta. 4+73.81:

$3L = (18.25 + 14)3 = 96.75'$

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJG	DATE 11 Sep 76
SUBJECT	T-Wall; Waterstops		CHECKED BY	DATE

W/L sta. 5+40.31 : L = 18.25+11 = 29.25'

W/L sta 5+77.49 : L = 15.25 + 8 = 23.25'

W/L sta 5+94.99 : L = 10.75 + 8 = 18.75'

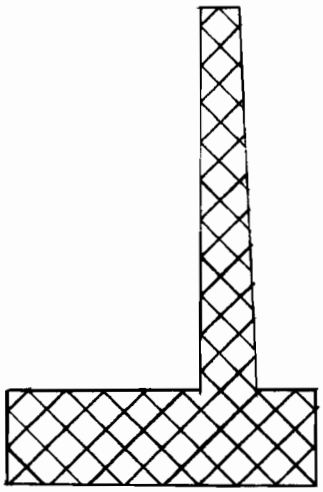
W/L sta 6+40.49 : L = 10.75+8 = 18.75'

Total = 384.75'

(Use 390 ef)

PROJECT	Florida Avenue Complex	Page ___ of ___	COMPUTED BY RJGr	DATE 11 Sep 76
SUBJECT	Expansion Joint Material		CHECKED BY	DATE

Expansion Joint Material -



Typical Area

W/L sta. 0+91.00, sta. 1+19.35, sta. 1+40.35:

$$3A = \left[\tfrac{1}{2}(10)\left(2+\tfrac{10}{24}\right) + 8(2.5)\right]3 = 96.25 \text{ sf}$$

W/L sta. 1+79.5, sta 2+62.5:

$$2A = \left[\tfrac{1}{2}(14)\left(2+\tfrac{14}{24}\right) + 11(2.5)\right]2 = 91.2 \text{ sf}$$

W/L sta. 2+77.12, sta. 3+22.90, sta. 3+67.90:

$$3A = \left[\tfrac{1}{2}(17)\left(2+\tfrac{17}{24}\right) + 11(2.5)\right]3 = 151.56 \text{ sf}$$

W/L sta. 4+11.90, sta 4+29.81, sta 4+73.81:

$$3A = \left[\tfrac{1}{2}(17)\left(2+\tfrac{17}{24}\right) + 14(2.5)\right]3 = 174.06 \text{ sf}$$

PROJECT	Florida Avenue Complex		COMPUTED BY	DATE
			RJgr	11Sep76
SUBJECT	Expansion Joint Material		CHECKED BY	DATE

w/L sta 5+40.31: $A = \frac{1}{2}(17)(2+\frac{17}{24}) + 11(2.5) = 50.52$ sf

w/L sta 5+77.49: $A = \frac{1}{2}(14)(2+\frac{14}{24}) + 8(2.5) = 38.08$ sf

w/L sta 5+94.99, w/L sta 6-40.49:

$2A = 2[\frac{1}{2}(9.5)(2+\frac{9.5}{24}) + 8(2.5)] = 62.76$ sf

Total = 664.43 sf

(Use 670 sf)

~~REASONABLE CONTRACT~~ ESTIMATE — SHEET OF

PROJECT OH [illegible] - East — INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Base Slab	85	CY		
	Stabilization Slab	113	CY		
	Walls	8.0	CY		
	Columns	17.0	CY		
	Overhead Beam	21.5	CY		
	Cement	730	CWT		
	Reinforcement	25000	lb		
	Structural Steel	—	—		
	Gate	27000	lb		
	Misc. Metals	1000	lb		
	Steel Sheet Piles, PMA-22	1500	SF		
	Concrete Prestressed Piles	2050	LF		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-252-453

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJ9r	DATE 11 Sep 76
SUBJECT	Concrete, Cement		CHECKED BY	DATE

Concrete --

Stabilization Slab = (83' x 11' x 4/12')/27

= 11.3 CY (Use 11.3 CY)

Base Slab = (2.5' x 11' x 83')/27

= 84.5 CY (Use 85 CY)

Walls = $40\left[\left(\frac{1}{2} \times \frac{14.33^2}{24}\right) + 1.\right]/27$

= 7.8 CY (Use 8.0 CY)

Column 1 = (3.5' x 2' x 22.83')/27

= 5.9 CY (Use 6.0 CY)

Column 2 = $22.5\left[\left(\frac{1}{2} \times 2.5' \times 2' \times \frac{14}{22.5}\right) + 2 \times 2.5\right]/27$

= 5.2 CY (Use 5.5 CY)

Column 3 = $22.5\left[\left(\frac{1}{2} \times 2.5' \times 2' \times \frac{14}{22.5}\right) + 2 \times 2.5\right]/27$

= 5.2 CY (Use 5.5 CY)

Overhead Beam = $\left[(2.75' \times 2) + (1.5 \times 1.75)\right] 70.5/27$

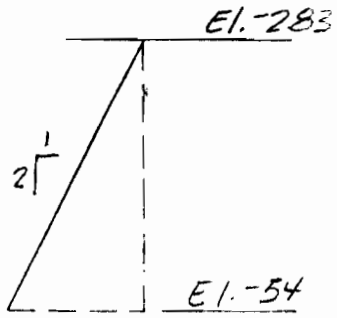
= 21.2 CY (Use 21.5 CY)

Cement = 141.1 x 5.17 = 729.5 cwt

(Use 730 cwt)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 10 Sep
SUBJECT	Concrete Piling		CHECKED BY	DATE

Concrete Prestressed Piles ~



$$\text{Pile Length} = \Delta\text{elev}\sqrt{1 + 1/n^2}$$

Δelev = 56.84', say 57'

Pile Length = 32 x 64' = 2048 lf (Use 2050')

Steel Sheet Piling ~

Depth of Piling = 18' x 82' = 1494 sf (Use 1500 sf)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 10Sep76
SUBJECT	Structural Steel		CHECKED BY	DATE

Structural Steel -

Gate Weight = 27000 lb

Misc. Metals = 50 x 70.5 + 2 x 25 x 10.5

= 765 lb (use 1000 lb)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJ9	DATE 10Sep 76
SUBJECT	Reinforcement		CHECKED BY	DATE

Reinforcement –

Base Slab –

12 #8 at 83' - Top, Longitudinal
13 #10 at 83' - Bottom, Longitudinal
#8 at 12" (22') - Transverse

T-Wall – Horizontal
#5 at 12" (40') - F.S.
#6 at 12" (40') - P.S.
- Vertical
#6 at 12" (9.5') - FS
#10 at 12" (9.0') - F.S.
#6 at 12" (19.0') - PS

Overhead Beam –

5-#4 at 70.5'
11-#11 at 70.5'

Column 1 –

9-#11 from El 0.0 to El 14.0 (17'/bar)
8-#11 from El 14.0 to El 22.5 (9'/bar)

Column 3 & 5 –

14-#10 from El 0.0 to El. 14.0 (17'/bar)
10-#10 from El. 14.0 to El. 14.0 (9'/bar)

PROJECT	Florida Avenue Complex	[redacted]	COMPUTED BY RJGr	DATE 10Sep
SUBJECT	Reinforcement		CHECKED BY	DATE

#4 - 5 x 70.5' x 0.668 = 235.5
#5 - 14 x 40' x 1.043 = 584.1
#6 - 14 x 40' x 1.502 = 841.1
40 x 9.5' x 1.502 = 570.8
40 x 19' x 1.502 = 1141.5
#8 - 12 x 83' x 2.67 = 2659.3
83 x 22' x 2.67 = 4875.4
#10 - 13 x 83' x 4.303 = 4642.9
40 x 9' x 4.303 = 1549.1
14 x 17' x 4.303 = 1024.1
10 x 9' x 4.303 = 387.3
#11 - 11 x 70.5' x 5.313 = 4120.2
9 x 17' x 5.313 = 812.9
8 x 9' x 5.313 = 382.5

23826.7

(Use 25000 lb)

~~REASONABLE CONTRACT~~ ESTIMATE					SHEET OF
PROJECT Swing Gate - RR, ~~West~~ East					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Stabilization Slab	4.5	CY		
	Base Slab	34.0	CY		
	Wall	1.5	CY		
	Columns	3.5	CY		
	Sill	3.5	CY		
	Structural Steel				
	Gate	5500	lb		
	Misc. Metals	600	lb		
	Reinforcement	9600	lb		
	Concrete Prestressed Piles	1400	lf		
	Steel Sheet Piles, PMA-22	1100	sf		
	Cement	240	cwt		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OP—242-683

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY	DATE
			RJGr	10 Sep
SUBJECT	Concrete, Cement		CHECKED BY	DATE

Concrete -

Base Slab = (2.5 x 3 x 45.5)/27

= 33.7 CY (Use 34 CY)

Stabilization Slab = (45.5 x 8 x 4/12)/27

= 4.5 CY (Use 4.5 CY)

Walls = $21.5\left[\left(\frac{1}{2} \times \frac{9.5^2}{24}\right) + 1.0\right]/27$

= 1.5 CY (Use 1.5 CY)

Columns = (2 x 2 x 10.5) 2/27

= 3.1 CY (Use 3.5 CY)

Sill = (1.5 x 23 x 2.46)/27

= 3.1 CY (Use 3.5 CY)

Cement = 45.9 x 5.17 = 237.3 cwt

(Use 240 cwt)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 10 Sep 76
SUBJECT	Reinforcement		CHECKED BY	DATE

Reinforcement ~

Base slab, Top & Bottom, Transverse

#9, 12" from 0'-8'

Base slab, Top & Bottom, Longitudinal

#9, 12" from 0-45.5'

Columns,

16-#11 from El. 2 to El 15

Wall, Exterior, Horizontal,

#6, 12" from El. 4.5 to El. 14.0

, Vertical

#8, 12" for 21.5'

#7, 12" for 21.5'

Sill,

8-#6 for 22'-0"

#6, 12" for 23'-0" (6.5')

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 10 Sep 76
SUBJECT	Reinforcement		CHECKED BY	DATE

#6 – 8 x 23' x 1.502 = 276.4
22 x 6.5' x 1.502 = 224.5
22 x 21.5' x 1.502 = 710.4
#7 – 22 x 12' x 2.044 = 539.6
#8 – 22 x 12' x 2.61 = 704.9
#9 – 46 x 20' x 3.4 = 3128.0
16 x 45.5' x 3.4 = 2475.2
#11 – 22 x 13' x 5.313 = 1519.5

9578.5 lb.

(Use 9600 lb)

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY RJGr	DATE 10 Sep 76
SUBJECT	Steel Sheet Piling		CHECKED BY	DATE

Steel Sheet Piling -

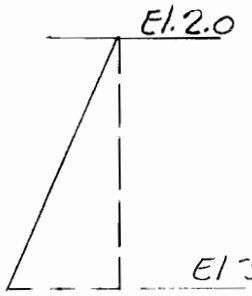
Depth = 22'

Length = 45.5'

A - 45.5' x 22' = 1001 sf

Use 1100 sf

Concrete Prestressed Piling -



Pile Length = $\Delta_{Elev}\sqrt{1+1/n^2}$

18 Piles at 2:1 Batter: $L_p = 18 \times 63' = 1134'$

4 Piles at 4:1 Batter: $L_p = 4 \times 58' = 232'$

1366'

(Use 1400')

REASONABLE CONTRACT ESTIMATE

SHEET OF

PROJECT Fill / Excavation - East

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Fill	1600	CY		
	Excavation	1480	CY		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OF—262-653

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY	DATE
			RJGr	9 Sep 76
SUBJECT	Fill Volume - East		CHECKED BY	DATE

End Area An (CY/1)	Average End Area ½(An + An+1) (CY/1)	Length Ln (ft)	Estimated Vol. ½(An+An+1)Ln (CY)
1.40			
	3.81	28.0	106.68
6.22			
	6.27	29.3	183.71
6.61			290.39
1.34			
	1.81	42.7	77.29
2.28			
	2.03	19.43	39.44
1.78			407.12
1.54			
	3.39	30.57	103.63
5.24			
	4.91	34.0	166.94
4.58			
	3.20	60.0	192.0
1.82			
	1.59	15.64	24.87
1.35			
	1.39	65.88	91.57
1.42			
	1.67	50.00	83.50
1.92			
	1.73	16.90	29.24
1.53			1098.87
1.50			
	1.70	25.0	42.5
1.89			
	3.89	20.0	77.8
5.89			1219.17

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY	DATE
			RJGr	9 Sep 76
SUBJECT	Fill Volume - East		CHECKED BY	DATE

End Area An (CY/1)	Average End Area 1/2(An + An+1) (CY/1)	Length Ln (ft)	Estimated Vol. 1/2 (An + An+1) Ln (CY)	
	Continued from the previous page.			
9.93	6.30	37.99	239.34	
2.66	2.63	4.98	13.10	
2.59	2.30	13.01	29.92	=24.58 / 1543.75
2.01	1.05	40.21	42.22	
0				
0	0.15	20.41	2.04	
0.3	0.33	50.0	16.50	
0.35	0.18	50.0	9.00	
0	0.12	89.03	10.68	1581.97
0.23				

Estimated Fill Volume = 1581.97

(Use 1600 CY)

PROJECT	Page __ of __	COMPUTED BY	DATE
Florida Avenue Complex		RJGr	9 Sep 76
SUBJECT		CHECKED BY	DATE
Excavation Volume - East			

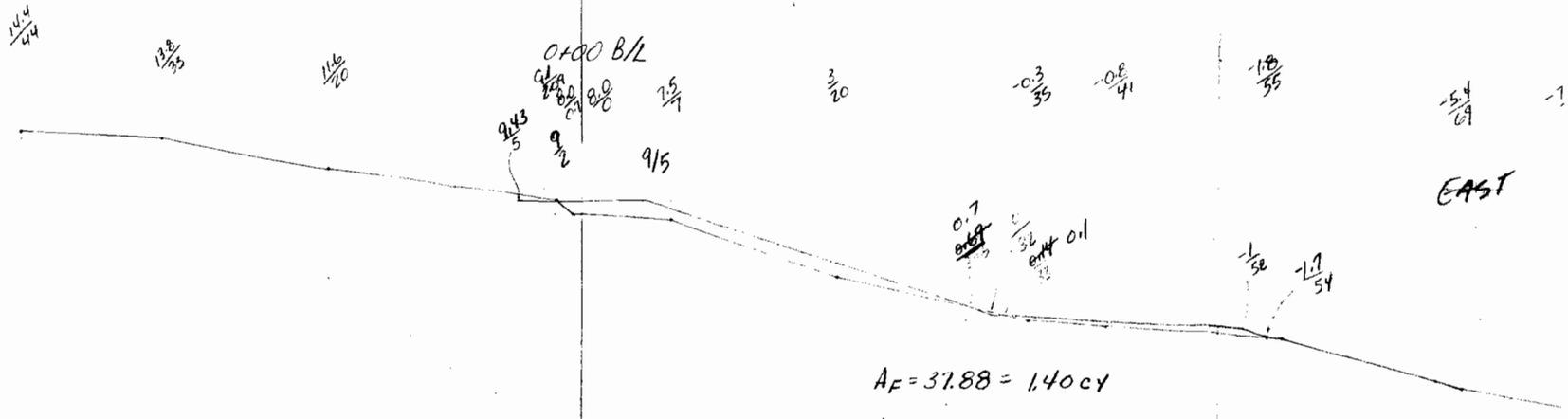
End Area An (CY/1)	Average End Area 1/2(An+An+1) (CY/1)	Length Ln ft	Estimated Vol. 1/2 (An + An+1)Ln (CY)	
0				
	1.30	42.7	55.51	
2.60				
	2.88	19.43	55.96	111.47
3.17				
3.54				
	4.90	30.57	149.79	
6.26				
	3.13	34.0	106.42	
0				
	0.69	15.64	10.79	378.47
1.37				
1.37				
	1.54	65.88	101.46	
1.70				
	1.59	50.00	79.50	
1.47				
	1.77	16.90	29.91	509.34
2.06				
2.0				
	1.35	25.0	33.75	
0.7				
	0.35	20.0	7.00	630.09
0				
1.98				
	2.69	37.99	102.19	
3.40				
	3.37	4.98	16.78	
3.33				749.06

PROJECT	Florida Avenue Complex		DATE
		PJG	9 Sep 96
SUBJECT	Excavation Volume - East	CHECKED BY	DATE

End Area An (CY/1)	Average End Area ½(An + An+1) (CY/1)	Length Ln (ft)	Estimated Vol. ½(An+An+1)Ln (CY)
	Continued from the previous page.		
1.72	2.53	13.01	32.92
4.6	3.16	40.21	127.06 (909.04)
1.6	1.89	20.41	38.57
2.17	2.25	50.0	112.50
2.33	3.08	50.0	154.00
3.83	2.96	89.03	263.53 (1477.64)
2.08			

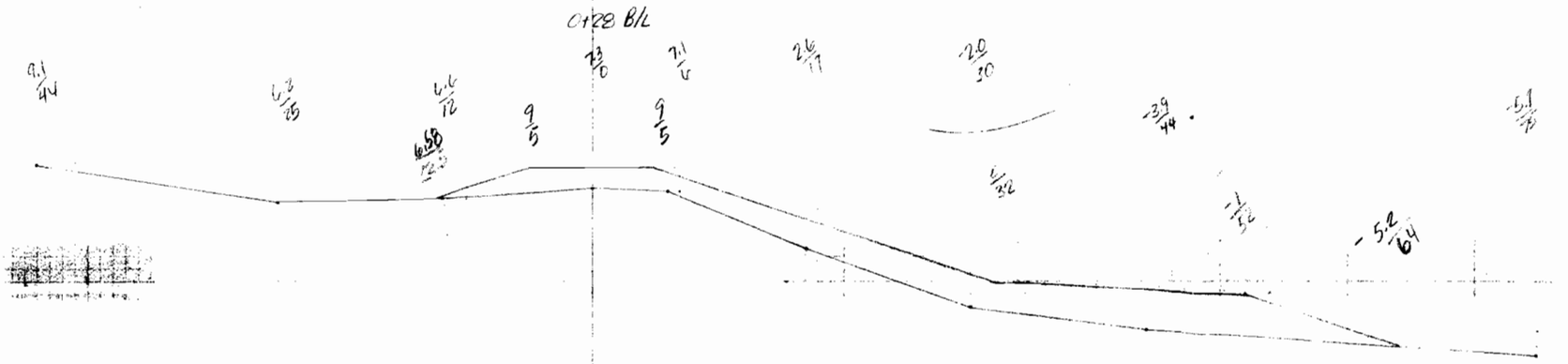
Estimated Excavation Volume = 1477.64

(Use 1480 CY)

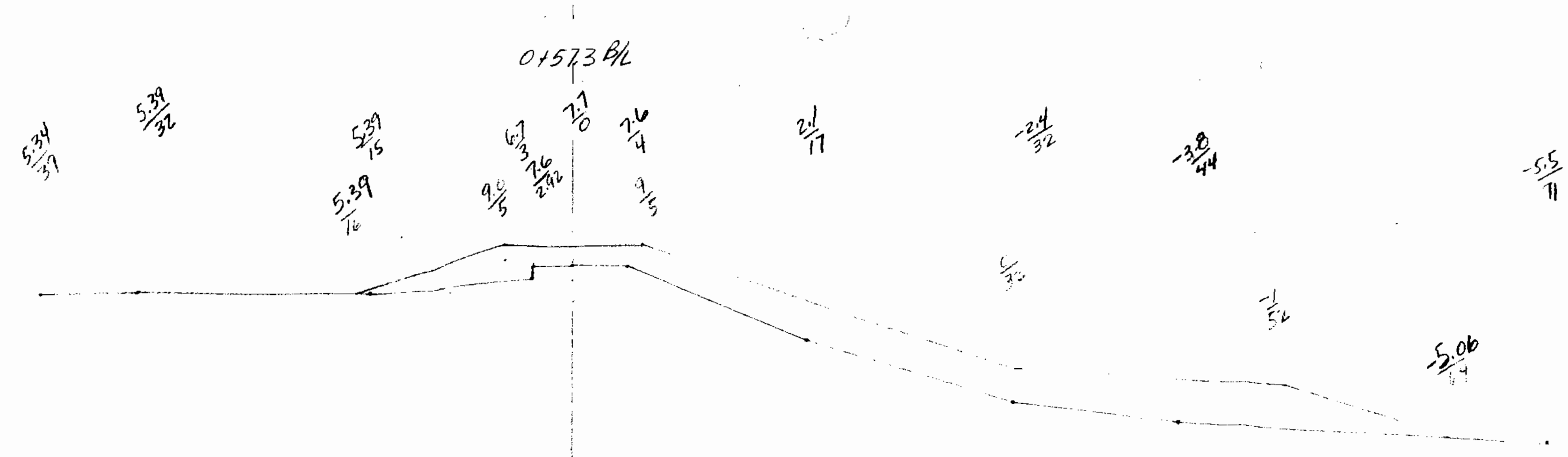


$A_F = 37.88 = 1.40\,cy$

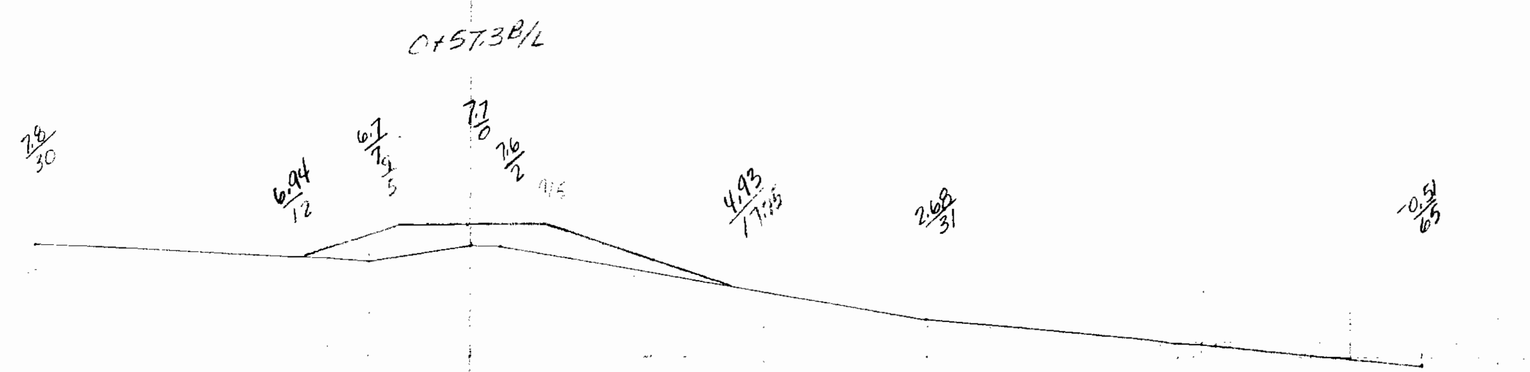
$A_E = 0$



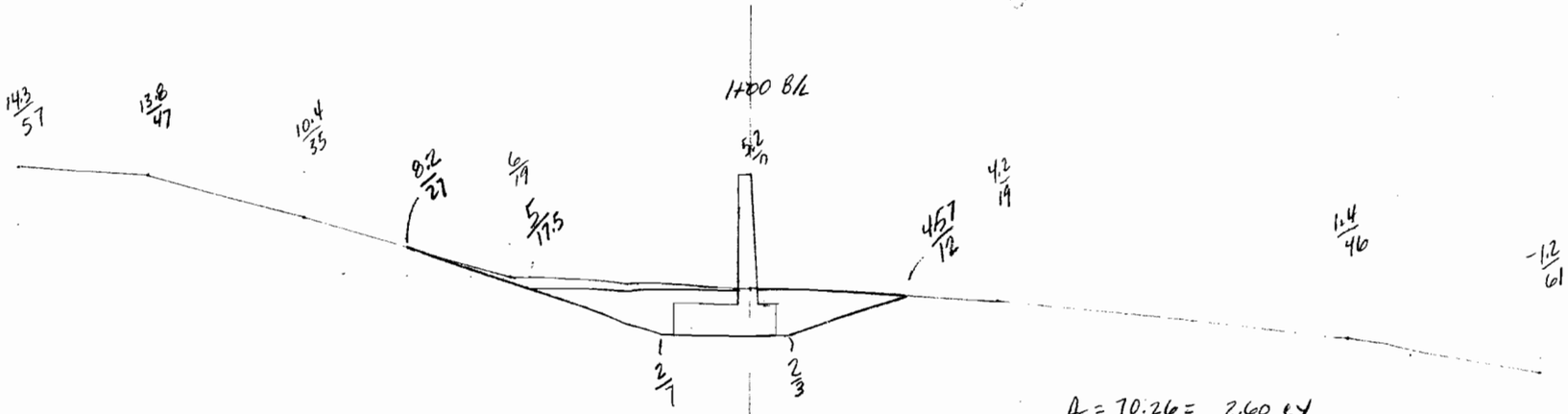
$A_F = 167.88 = 6.22\,cy$



$A_F = 178.42 = 6.61$ CY

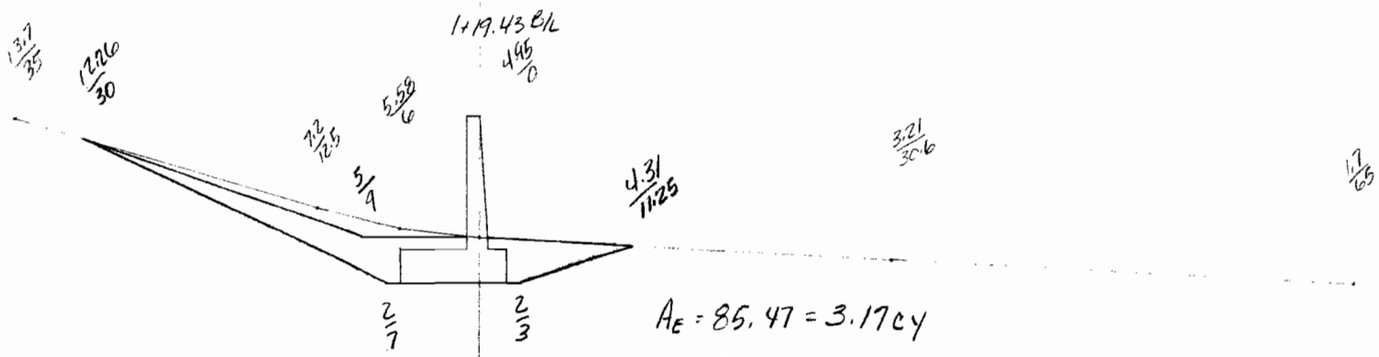


$A_F = 36.12 = 1.34$ CY



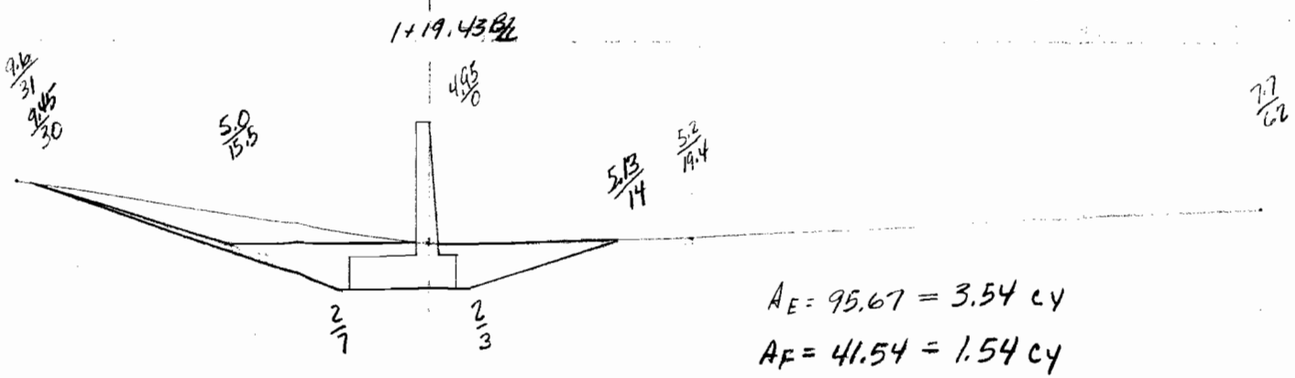
$A_E = 70.26 = 2.60$ cy

$A_F = 61.51 = 2.28$ cy



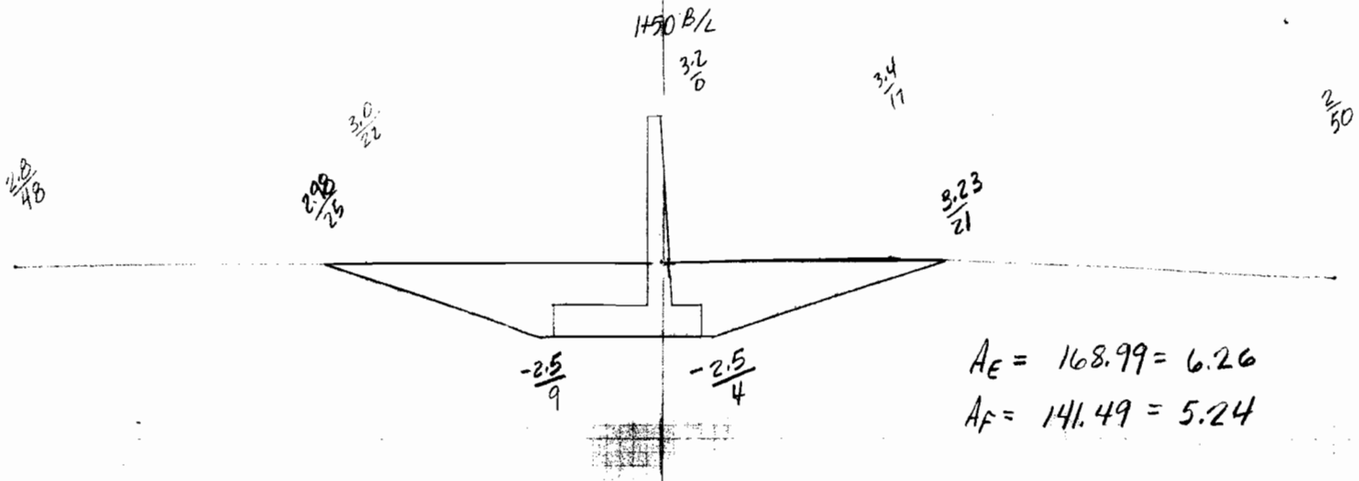
$A_E = 85.47 = 3.17$ cy

$A_F = 48.07 = 1.78$ cy



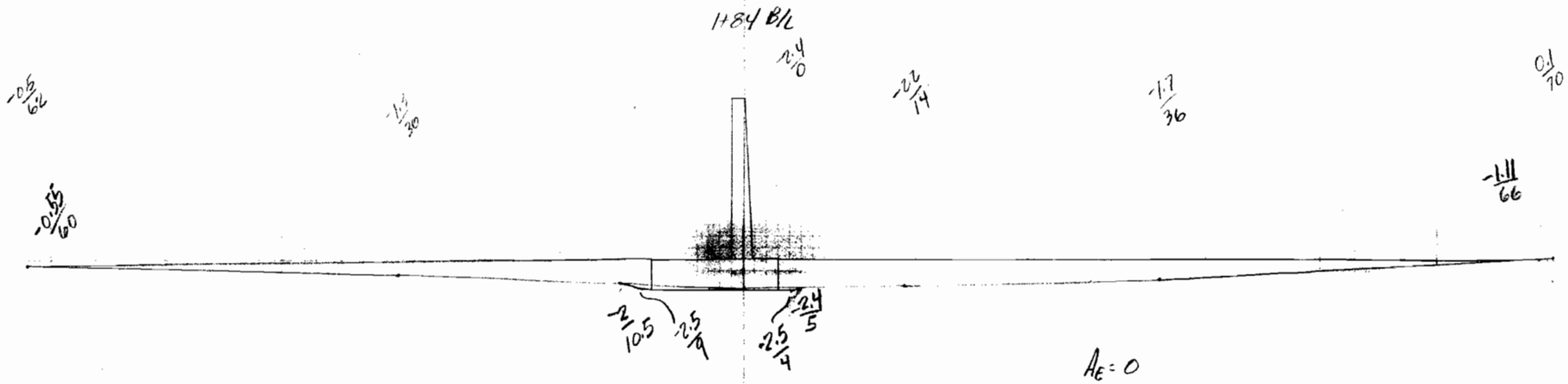
$A_E = 95.67 = 3.54$ cy

$A_F = 41.54 = 1.54$ cy



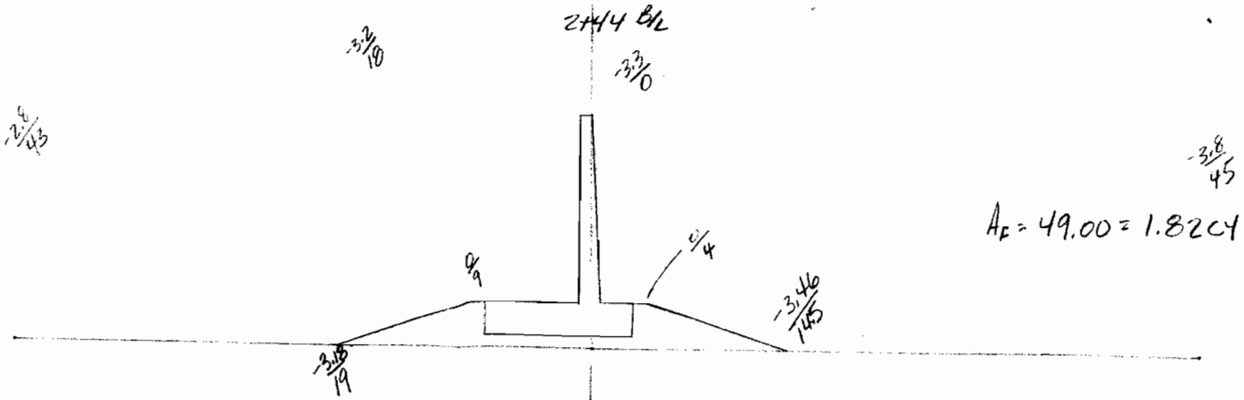
$A_E = 168.99 = 6.26$

$A_F = 141.49 = 5.24$



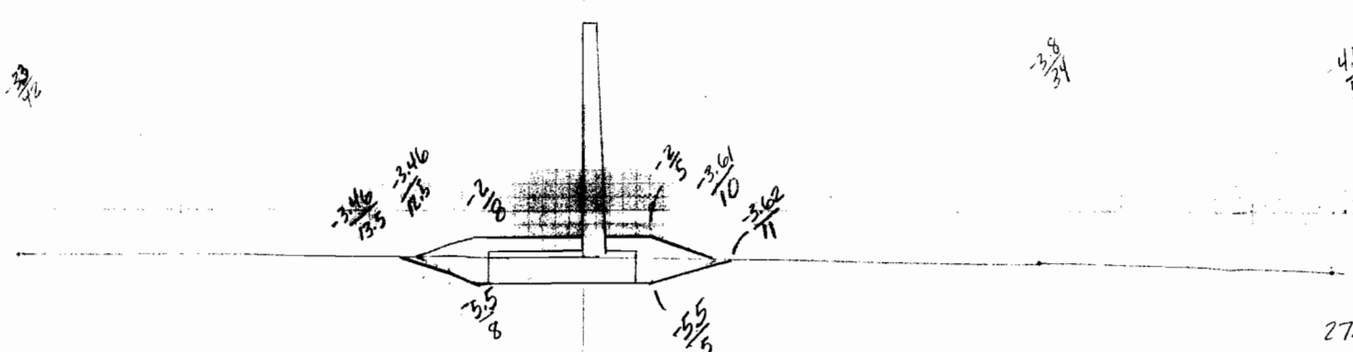
$A_E = 0$

$A_F = 123.70 = 4.58 CY$



$A_F = 49.00 = 1.82 CY$

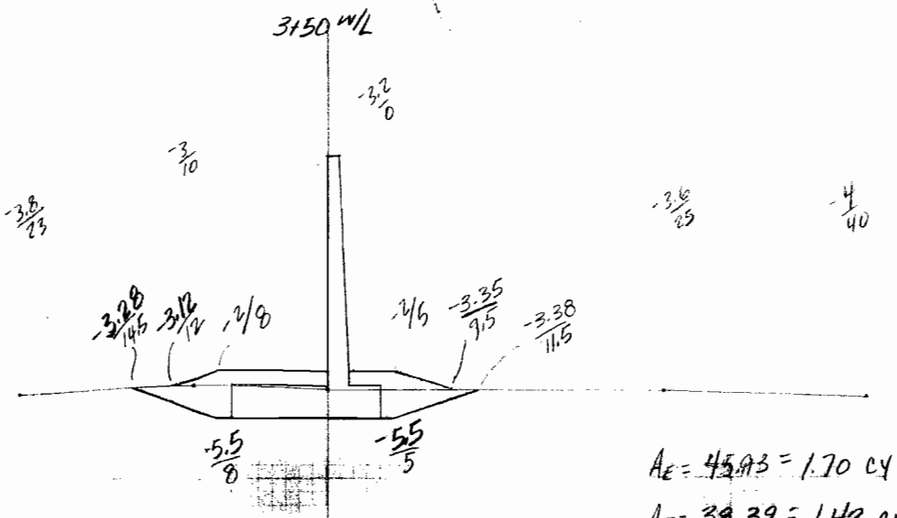
2+69.64 B/L = 2+84.12 W/L (42' from last station)



27.077

$A_E = 36.99 = 1.37 CY$

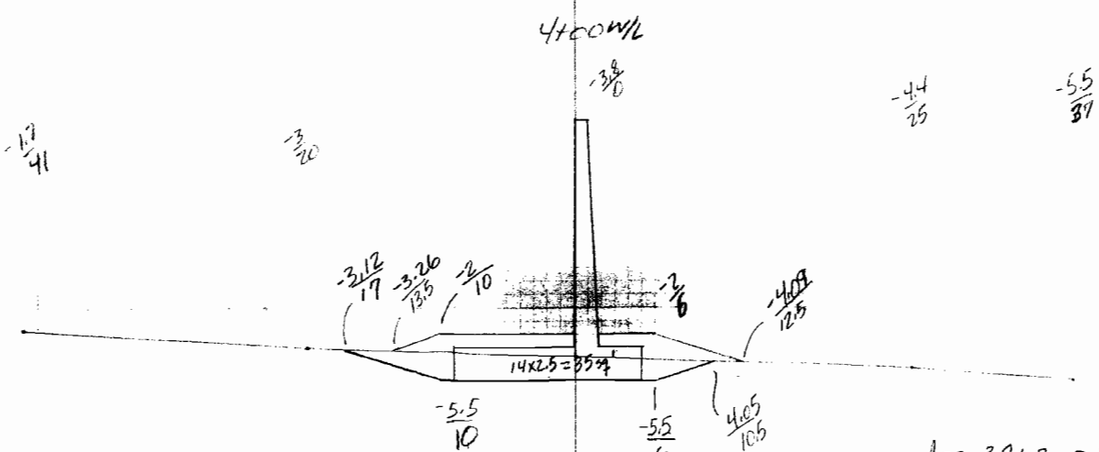
$A_F = 36.57 = 1.35 CY$



3+50.00
-2+84.12
65.88

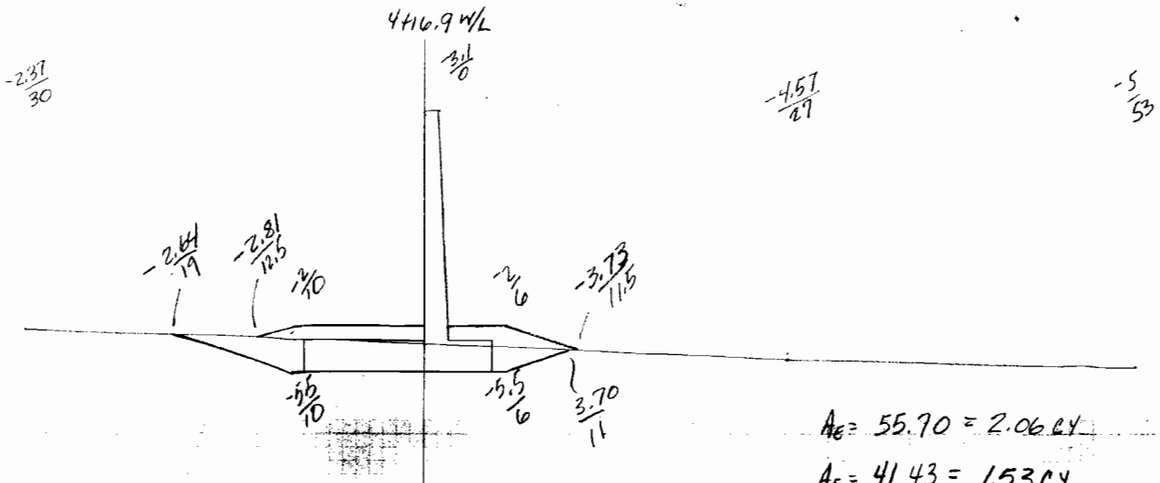
$A_E = 45.93 = 1.70$ cy

$A_F = 38.39 = 1.42$ cy



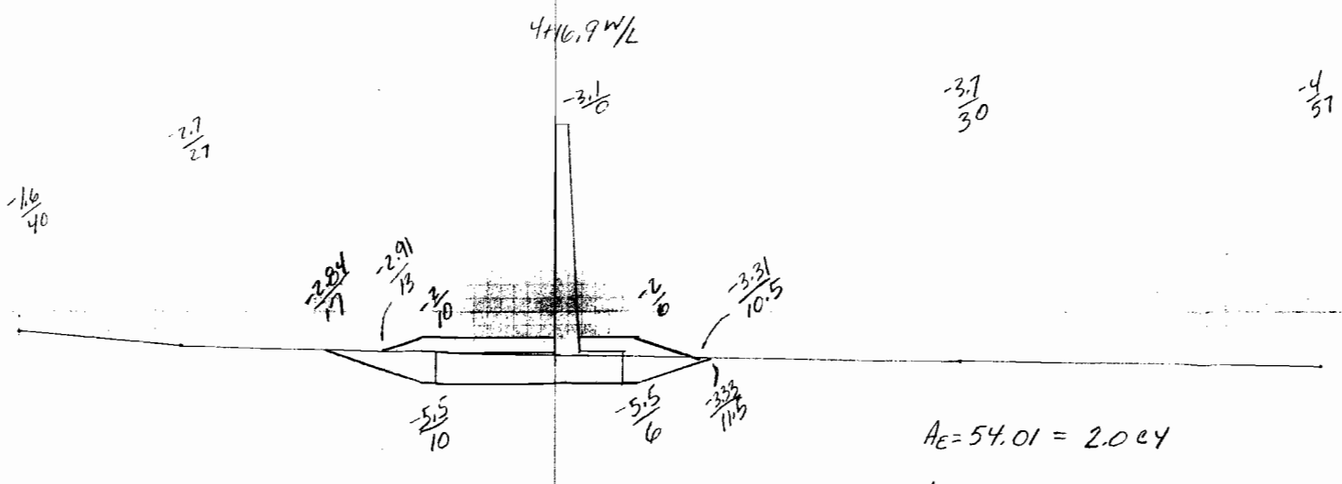
$A_E = 39.63 = 1.47$ cy

$A_F = 51.76 = 1.92$ cy



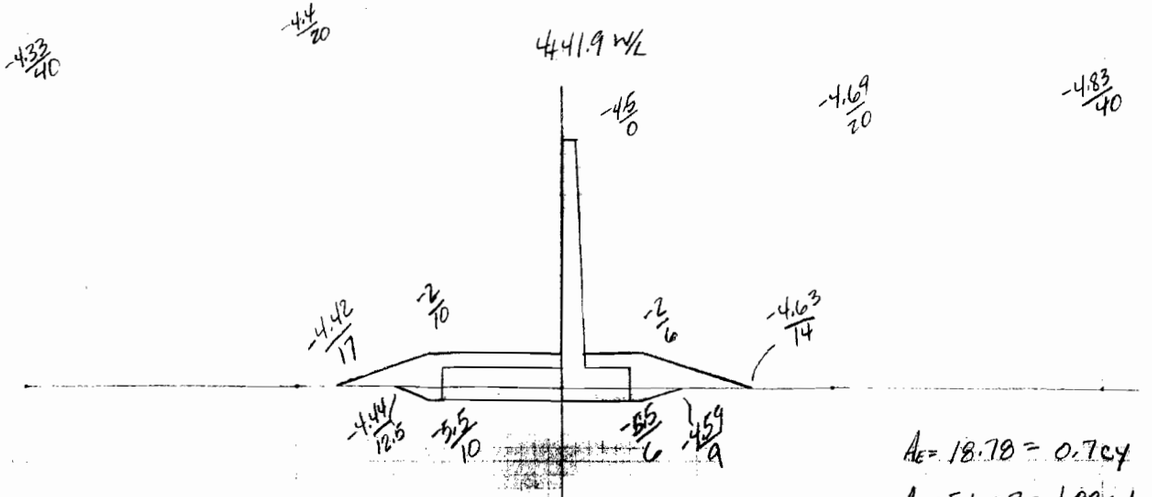
$A_E = 55.70 = 2.06\ cy$

$A_F = 41.43 = 1.53\ cy$



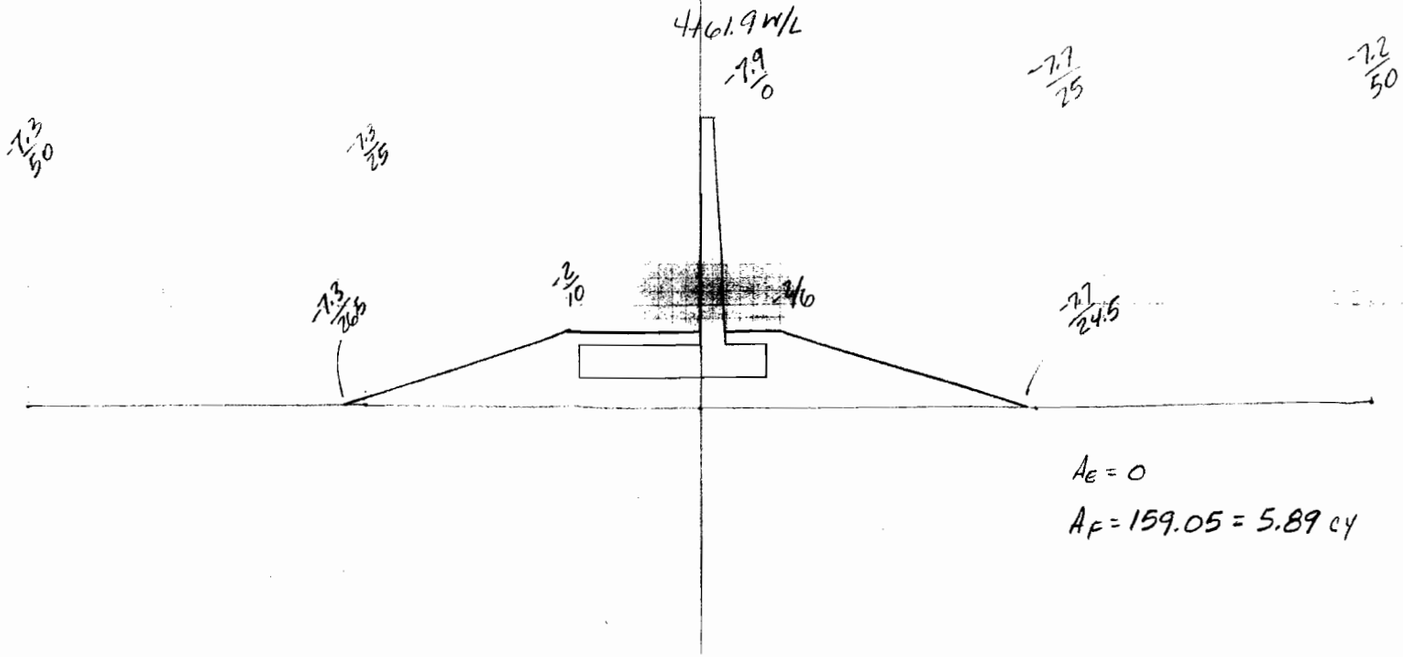
$A_E = 54.01 = 2.0\ cy$

$A_F = 40.42 = 1.50\ cy$



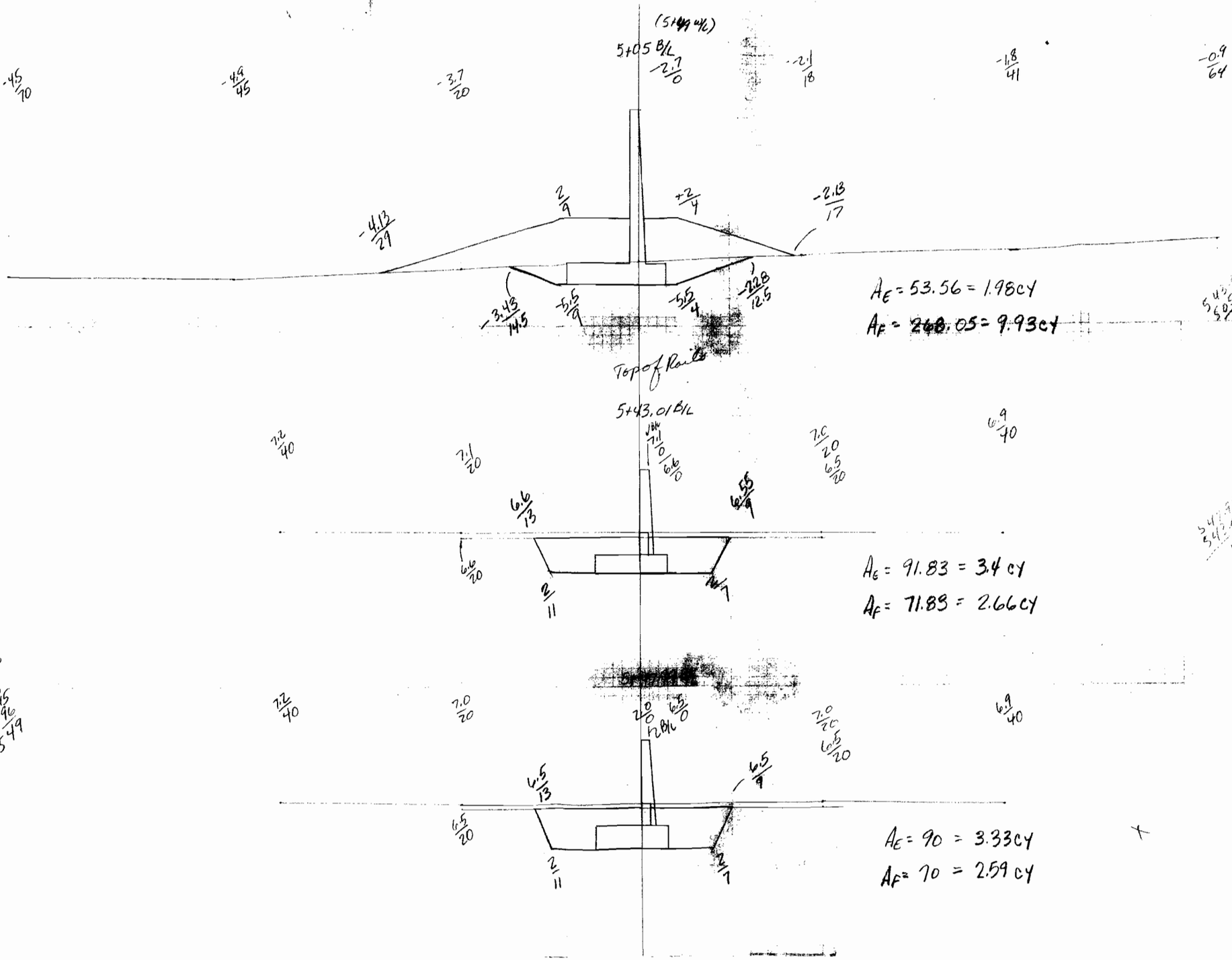
$A_E = 18.78 = 0.7\,cy$

$A_F = 51.02 = 1.89\,cy$



$A_E = 0$

$A_F = 159.05 = 5.89\,cy$



$A_E = 53.56 = 1.98 cy$

$A_F = 268.05 = 9.93 cy$

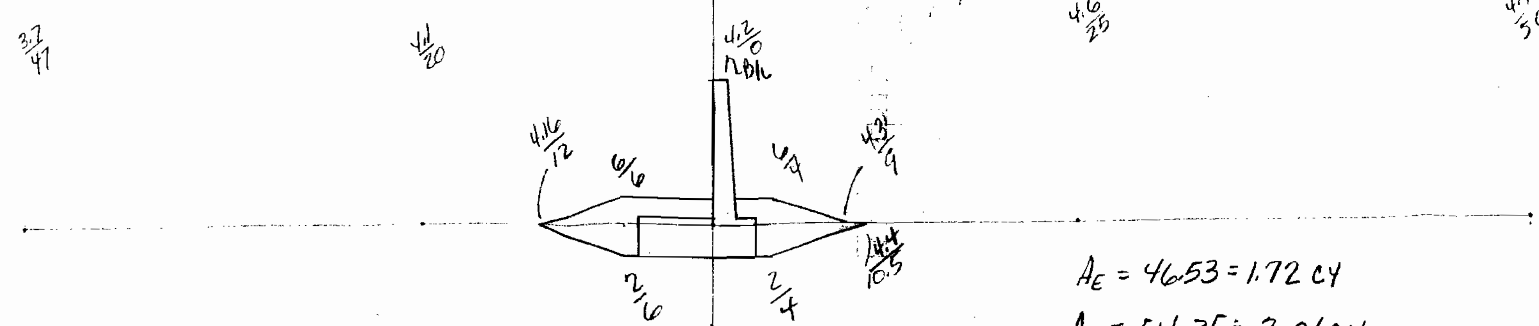
$A_E = 91.83 = 3.4 cy$

$A_F = 71.89 = 2.66 cy$

$A_E = 90 = 3.33 cy$

$A_F = 70 = 2.59 cy$

5+61 B/L



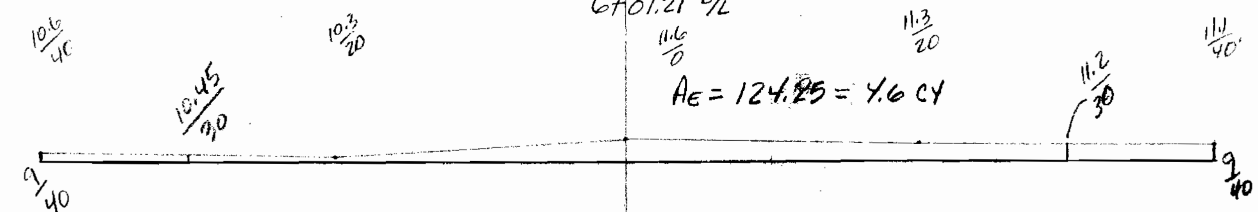
$A_E = 46.53 = 1.72$ CY

$A_F = 54.35 = 2.01$ CY

561.00
547.99
13.01

601.21
561.00
40.21

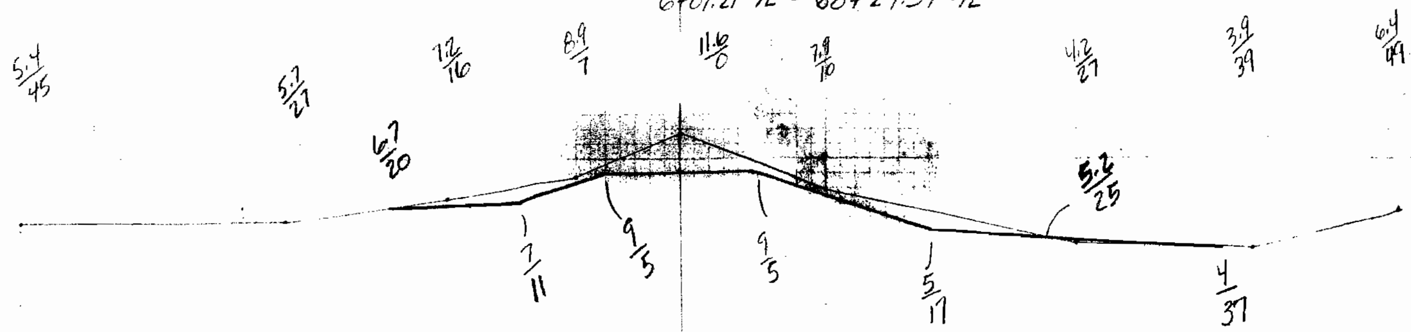
6+01.21 B/L



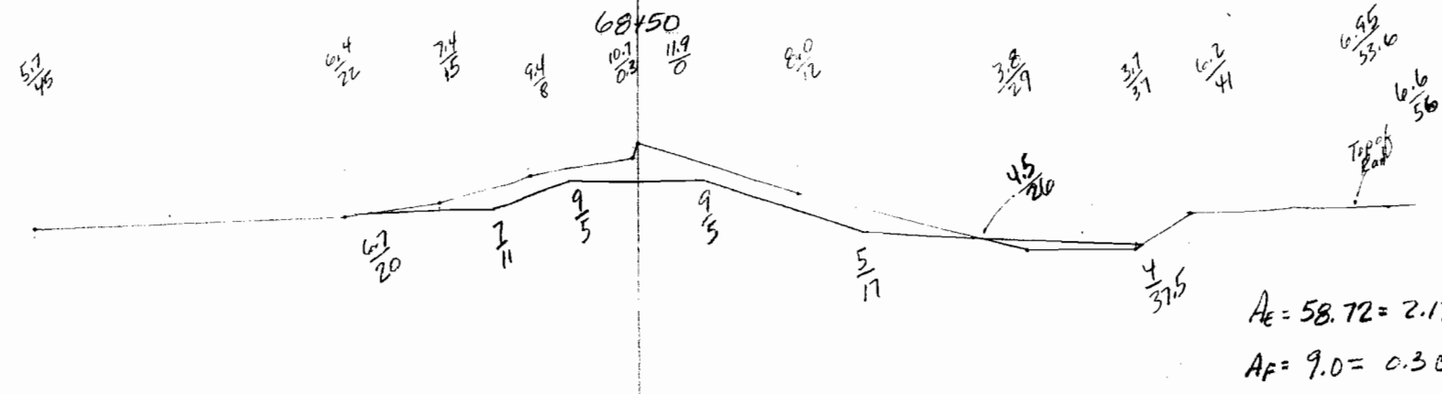
$A_E = 124.25 = 4.6$ CY

30 Row Both sides

6+01.21 B/L = 68+29.59 B/L



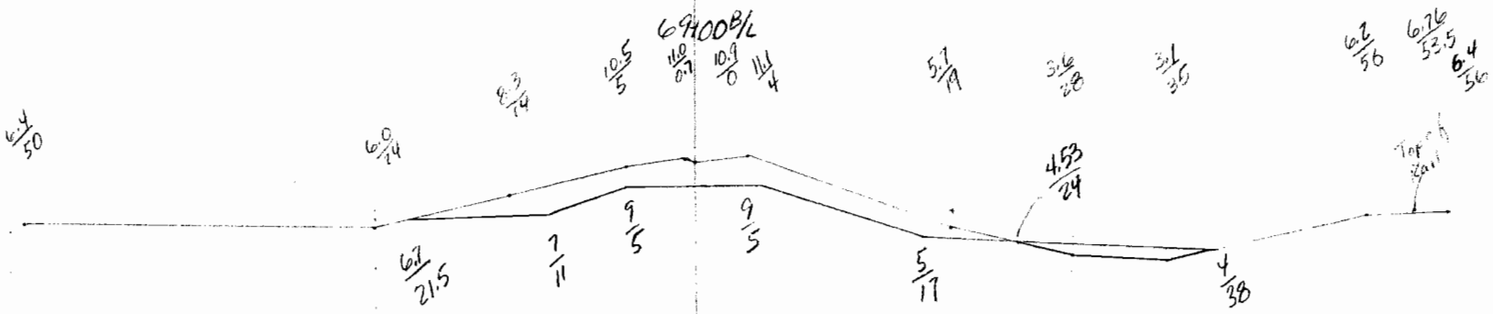
$A_E = 43.3 = 1.6$ CY



$A_E = 58.72 = 2.17 cy$

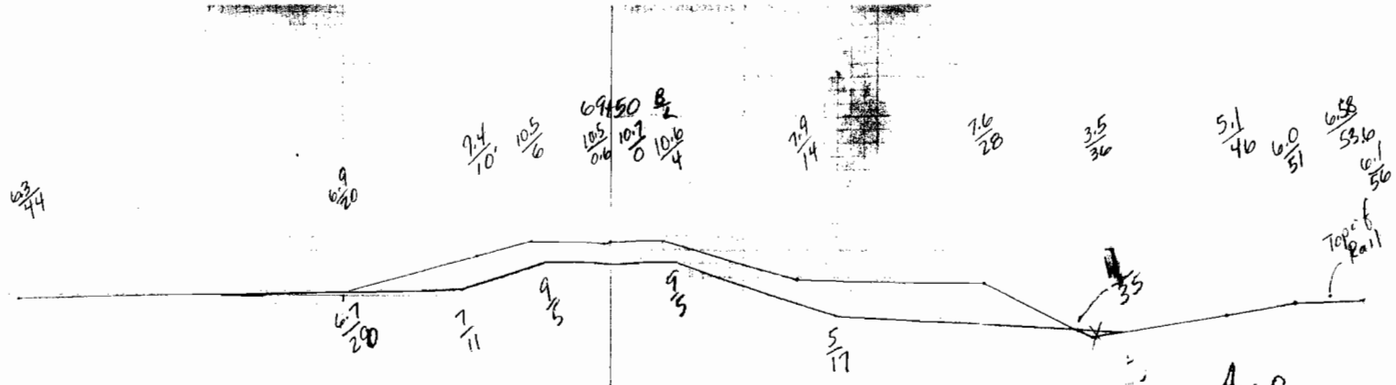
$A_F = 9.0 = 0.3 cy$

68+50.00
- 29.57
20.43



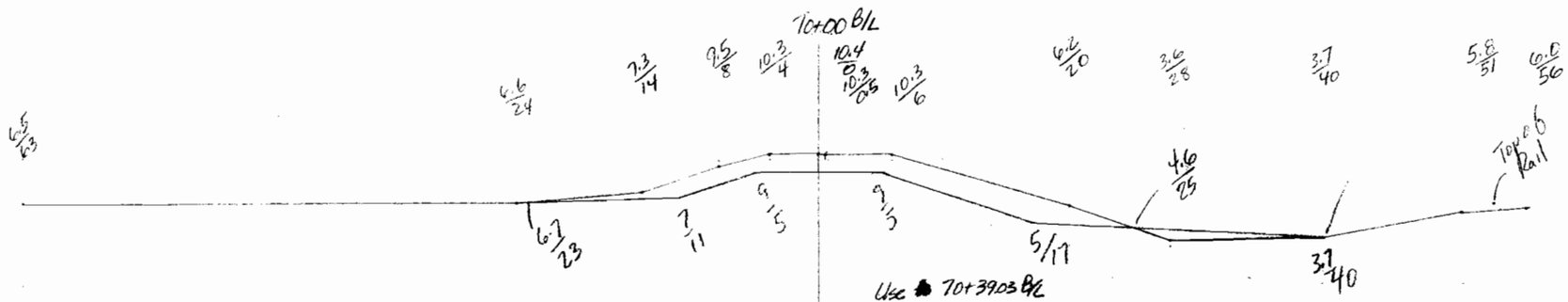
$A_E = 63.04 = 2.33 cy$

$A_F = 9.35 = 0.35 cy$



$A_F = 0$

$A_E = 103.51 = 3.83cy$



$A_E = 56.13 = 2.08cy$

$A_F = 6.15 = 0.23cy$

PROJECT Florida Avenue Complex | Page — | DATE 9 Sept

SUBJECT Bypass Channel Excavation | CHECKED BY | DATE

Bypass Channel Excavation -

End Area An (CY/1)	Average End Area ½(An + An+1) (cy/1)	Length Ln (ft.)	Volume ½(An + An+1)Ln (CY)
18.9			
	19.5	11.0	214.5
20.1			
	20.0	14.0	280.0
19.9			
	19.6	20.	392.0
19.2			
	18.7	20.	374.0
18.2			
	18.9	20.	378.0
19.6			
	18.2	20.	364.0
16.8			
	17.8	20	356.0
18.8			
	17.9	23.	411.7
17.0			

2770.2 CY

(Use 2800 CY)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJQr	DATE 9Sep76
SUBJECT	Bypass Channel Fill		CHECKED BY	DATE

Bypass Channel Fill -

End Area An (CY/1)	Average End Area ½(An + An+1) (CY/1)	Length Ln (ft)	Volume ½(An+An+1)Ln (CY)
18.9			
	19.0	11	209.0
19.9			
	19.9	14	278.6
19.9			
	20.7	20	414.0
21.5			
	22.8	20	456.0
24.1			
	22.2	20	444.0
20.2			
	18.5	20	370.0
16.8			
	17.8	20	356.0
18.8			
	17.9	23	411.7
17.0			

2934.3 CY
(Use 3000 CY)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 9Sep 76
SUBJECT	Structure Excavation		CHECKED BY	DATE

Structure Excavation

End Area An (CY/1)	Average End Area 1/2 (An + An+1) (CY/1)	Length Ln (ft)	Volume 1/2 (An+An+1) Ln (CY)
9.4			
	12.1	11	133.1
14.8			
	17.5	14	245.0
20.1			
	25.4	20	508.0
30.6			
	31.2	20	624.0
31.7			
	30.1	20	602.0
28.4			
	25.7	20	514.0
22.9			
	18.5	20	370.0
14.0			
	10.6	23	243.8
7.1			

3239.9 CY
(Use 3300 CY)

PROJECT	Florida Avenue Complex	Page __ of __	COMPUTED BY	DATE
			RJGr	9 Sep 76
SUBJECT	Structure Fill		CHECKED BY	DATE

Structure Fill -

End Area A_n (CY/1)	Average End Area $\frac{1}{2}(A_n + A_{n+1})$ (CY/1)	Length L_n (ft)	Volume $\frac{1}{2}(A_n + A_{n+1})L_n$ (CY)
9.4			
	7.5	11	82.5
5.6			
	12.0	14	168.0
18.4			
	21.3	20	426.0
24.1			
	23.5	20	470.0
22.8			
	22.6	20	452.0
22.4			
	19.1	20	382.0
15.7			
	12.6	20	252.0
9.4			
	8.3	23	190.9
7.1			

2673.9 CY
(Use 2700 CY)

PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY	DATE
			RJGr	9 Sep 76
SUBJECT	Cofferdam Excavation		CHECKED BY	DATE

Cofferdam Excavation

End Area An (CY/1)	Average End Area ½(An + An+1) (CY/1)	Length Ln (ft)	Volume ½(An + An+1)Ln (CY)
23.5			
	23.7	11	260.7
23.8			
	23.4	14	327.6
22.9			
	22.7	20	454.0
22.5			
	21.8	20	436.0
20.7			
	20.0	20	400.0
19.3			
	19.1	20	382.0
18.9			
	18.5	20	370.0
18.1			
	18.5	23	425.5
18.8			

3055.8 CY
(Use 3100 CY)

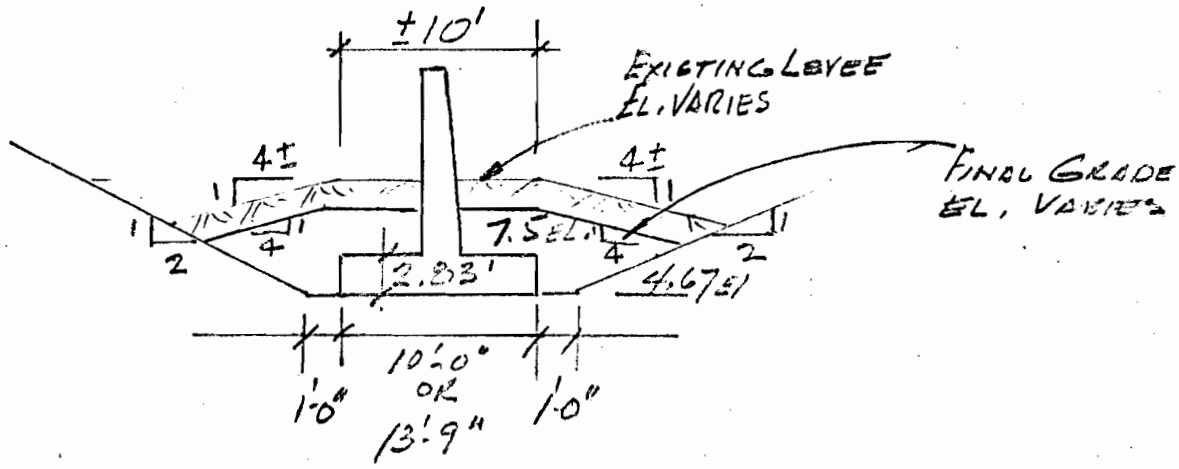
PROJECT	Florida Avenue Complex	Page — of —	COMPUTED BY RJGr	DATE 9 Sep 76
SUBJECT	Cofferdam Fill		CHECKED BY	DATE

Cofferdam Fill

End Area A_n (CY/1')	Average End Area $\frac{1}{2}(A_n + A_{n+1})$ (CY/1')	Length L_n (ft)	Volume $\frac{1}{2}(A_n + A_{n+1})L_n$ (CY)
28.7			
	28.4	11	312.4
28.0			
	28.3	14	396.2
28.5			
	28.4	20	568.0
28.2			
	28.1	20	562.0
27.9			
	28.2	20	564.0
28.4			
	29.1	20	582.0
29.8			
	30.1	20	602.0
30.4			
	31.4	23	722.2
32.3			

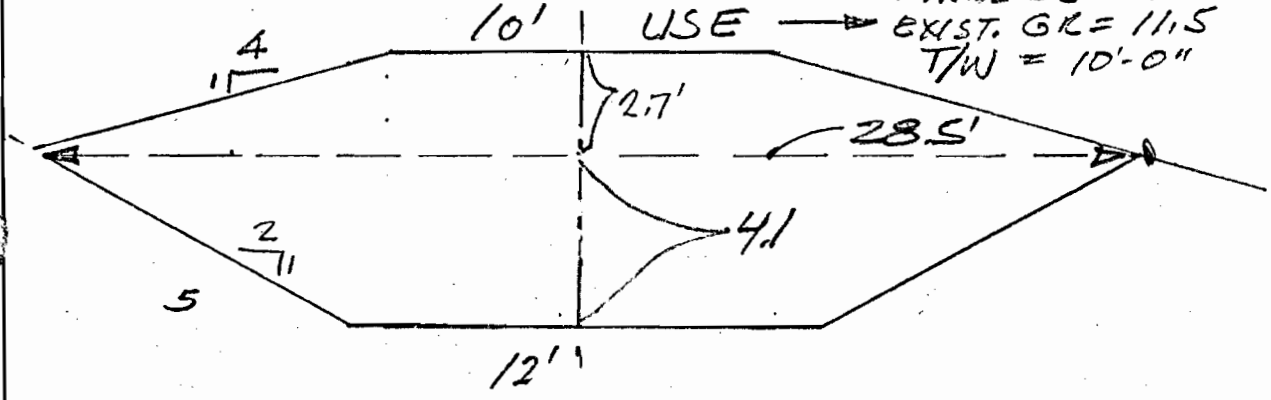
4308.8 CY
(Use 4350 CY)

PROJECT	Page 2 of —	COMPUTED BY	DATE
NOFBL INTRACOASTAL RUNWAY STA.		[illegible]	1-72
SUBJECT		CHECKED BY	DATE
STRUCTURE EXCAVATION			



875+59.5 → 875+60.52 TO 875+70

DIST = 9.5' + 1' (See below)
FINAL GR = ~~13.0~~ 14.0
EXIST. GR = 11.5
T/W = 10'-0"

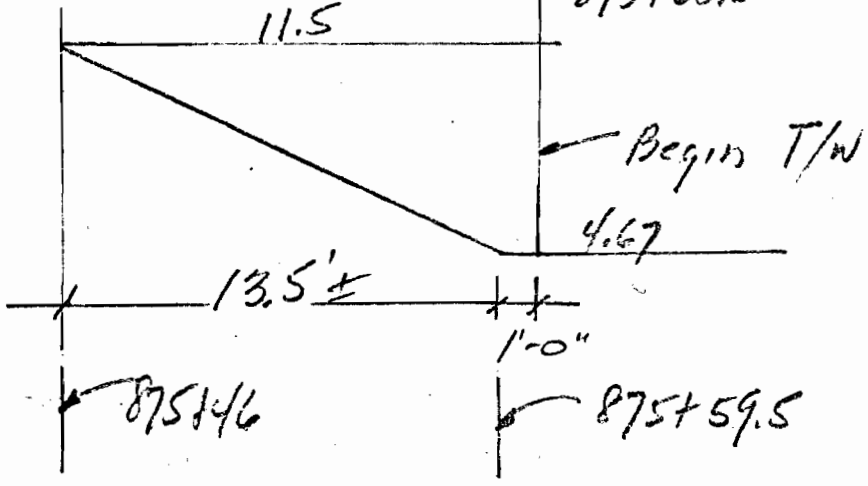


END AREA
$\frac{1}{2}(10+28.5)\,2.7 = 51.9$
$\frac{1}{2}(12+28.5)\,4.1 = 83.0$
} 135 SF

875+46 TO 875+59.5

TRANSITION 875+60.5

0 SF to 135 SF



PROJECT	Florida Avenue Complex - West	Page — of —	COMPUTED BY	DATE
SUBJECT	Conversation w/ Pepper / Assoc.		CHECKED BY	DATE

837-7330

Telecon: (with Mr. James G. Bigham)

Date 24 Aug 1976

1. Mr Sidhur Mehta of Pepper & Associates (AE in charge of West WPC Pumping Station Design) requested a preliminary estimate of the Floodwall from w/L sta 0+10 to w/L sta 4+63.47, excluding excavation and fill and monoliths 4 and 5.

2. The following estimate compiles with that request.

Robert J. Gubb

[redacted] ESTIMATE | SHEET OF

PROJECT: Florida Avenue Complex - West IHNC (Pepper & Assoc. -0+10 to 4+63.46) | INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Wall	152.3	CY		
	Columns	8.5	CY		
	Base Slab	237.4	CY		
	Stabilization Slab	31.0	CY		
	Sill	7.5	CY		
	Cement	2187.0	cwt		
	Reinforcement	78100.0	lb	[illegible]	
	Steel Sheet Piling, PMA-22	6900	sf		
	Steel Sheet Piling, PZ-27	900	sf		
	Concrete Prestressed Piles, 12"x12"	7875	lf	✓	
	Waterstops, L-Type	25	of		
	Waterstops, 3-Bulb Type	119	lf		
	Construction Joint Material	325	sf	225	
	Structural Steel				
	Gates	19800	lb		
	Embedded Steel	1600	lb		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-252-453

[redacted] ESTIMATE Pepper{ Assoc.

SHEET OF

PROJECT Florida Avenue Complex - I-Wall, West IHNC (WL -0+10 to WL 0+40)

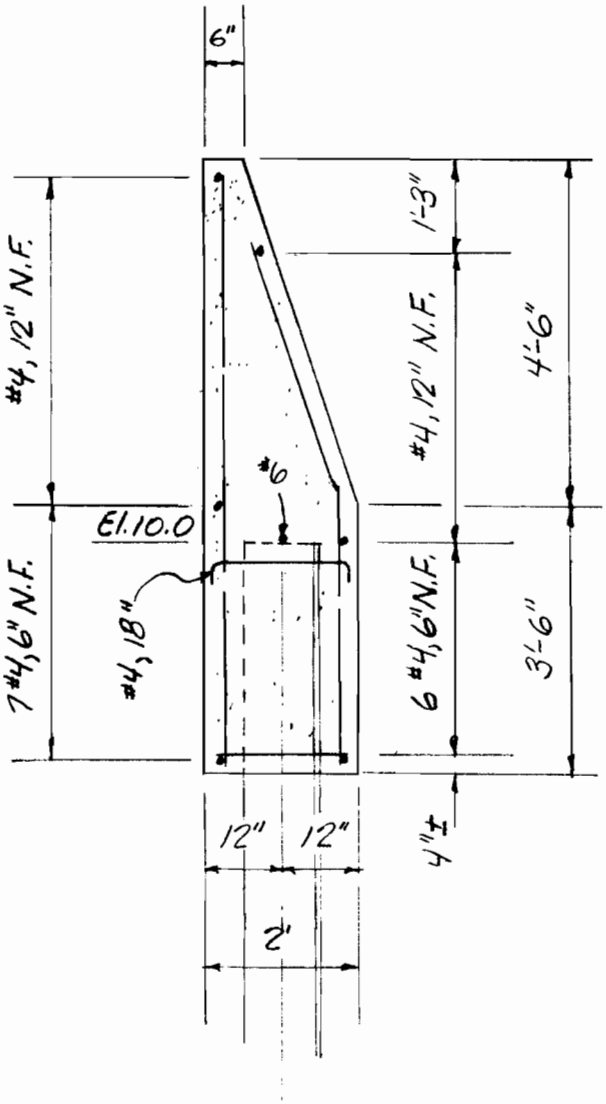
INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete (Wall)	26	CY		
	Cement	132	CWT		
	Reinforcement	800	lb		
	Steel Sheet Piling, PZ-27	900	sf		
	Waterstops, L-Type	25	ef		
	Waterstops, 3-Bulb Type	9	ef		
	Construction Joint Material	45	sf		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O—241-433

PROJECT	Page — of —	COMPUTED BY	DATE
SUBJECT I-Wall (-0+10 to 0+40, W/L)		CHECKED BY	DATE



Length = 50'-0"
2 transitions from I-Wall to T-Wall

1-Joint

Concrete-

Volume = (13.75 sf)(50)
= 685 cf = 25.4 cy
(Use 26 cy)

Cement-

Volume x 5.17 $\frac{cwt}{cy}$ =
25.4 x 5.17 = 131.16 cwt
(Use 132 cwt)

Reinforcement-

21.16(0.668) 50 + 50(1.502) = 782.06 lb

(Use 800 lb)

PROJECT	Page — of —	COMPUTED BY	DATE
SUBJECT: I-Wall (-0+10 to 0+40, W/L)		CHECKED BY	DATE

Steel Sheet Piling -

40'x20' = 800 sf (Use 900 sf)

Waterstops, L-Type -

El. 15 to El. 6 (sta 0+00 W/L) = 9'

El. 15 to El. 0.5 (sta. 0+40 W/L) = 14.5'

23.5'

(Use 25 ft)

Waterstops, 3-Bulb Type

El. 14.5 to El. 7.25 (sta 0+40) = 7.25'

(Use 9ft)

Construction Joint Material -

13.75(3) = 41.25 sf, (Use 45sf)

[redacted] ESTIMATE Pepper & Assoc. | SHEET OF

PROJECT Florida Avenue Complex - Swing Gate, Harbor Rd, West | INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	1st pour - Base Slab	28.0	CY		
	2nd pour - Base Slab	1.0	CY		
	Step - Base Slab	1.0	CY		
	Stabilization Slab	4.0	CY		
	Columns	4.0	CY		
	Walls	0.5	CY		
	Cement	200.0	CWT		
	Reinforcement	4800	lb		
	Structural Steel	—			
	Gates	10800	lb		
	Embedded Steel	600	lb		
	Concrete Piling	1014	LF		
	Steel Sheet Piling, PMA-22	1050	SF		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O—233-453

[redacted] ESTIMATE Pepper & Associ. | SHEET OF

PROJECT: Florida Avenue Complex - Swing Gate, Railroad, West IHNC | INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Stabilization Slab	5	CY		
	Base Slab	37	CY		
	Wall	5	CY		
	Columns	4.5	CY		
	Sill	7.5	CY		
	Structural Steel	—			
	Gate	9000	lb		
	Embedded Steel	1000	lb		
	Reinforcement	10800	lb		
	Conc. Prestressed Piles	1250	LF		
	Steel Sheet Pile, AMP-22	1350	SF		
	Cement	305	CWT		
	Support Pedestal				
	Concrete				
	Base Slab	0.4	CY		
	Wall	0.8	CY		
	Reinforcement				
	Concrete Pile	56	LF		
	Jack				

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 OF—242-633

[redacted] ESTIMATE Pepper/Assoc | SHEET OF

PROJECT Florida Avenue Complex - T-Wall, West IHNC (0+40.to 3+79.92) | INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete				
	Base Slab	170	CY		
	Walls	120	CY		
	Stabilization Slab	22	CY		
	Cement	1550	cwt		
	Steel Sheet Piling, PMA-22	4500	sf		
	Reinforcement	61700	lb	$1.20	
	Concrete Prestressed Piling, 12"x12"	5550	lf		
	Waterstops, 3-Bulb Type	110	lf		
	Construction Joint Material	180	sf		

ENG FORM APR 67 1738 SUPERSEDES ENG FORM 1738, 1 APR 54, WHICH IS OBSOLETE.

GPO : 1967 O-244-453

PROJECT Preliminary - Florida Ave West	Page — of —	[redacted] BY	DATE
SUBJECT Concrete, Cement (0+40 to 3+79.72		CHECKED BY	DATE

Concrete -

Base Slab = 2.5 (8) (216.17) = 4334.2 cf = 160.52 cy

(Use 170 cy)

Walls:

w/L sta 0+40 to sta 0+98.09:

$[1(11) + \frac{11^2}{24}(1/2)]\,58.09 = 785.4\text{ cf} = 29.1\text{ cy}$

w/L sta 0+98.09 to w/L sta 3+79.71:

$[1(12) + \frac{12^2}{24}(1/2)](158.62) = 2379.3\text{ cf} = 88.12\text{ cy}$

Total = 117.22 cy

(Use 120 cy)

Stabilization Slab = 4/12 (8)(216.17) = 576.45 cf

= 21.35 cy

(Use 22 cy)

Cement = 299.09 x 5.17 = 1546.29 cwt.

(Use 1550 cwt)

PROJECT Florida Avenue - Prelim	Page __ of __	COMPUTED BY	DATE
SUBJECT Steel Sheet Piling (0+40 to 3+79.72, W/L)		CHECKED BY	DATE

W/L sta. 0+40 to W/L sta 0+98.09:

Top sheet piling = El +1.25

Bottom sheet piling = El. -20.

$A = 58.09 \times 21.25 = 1234.41$ sf

W/L sta. 0+98.09 to W/L sta 3+79.07:

Top sheet piling = El. +0.25

Bottom sheet piling = El. -20

$A = 20.25 \times 157.98 = 3199.09$ sf

Total = 4433.5 sf

(Use 4500 sf)

PROJECT	Page __ of __	[illegible]	[illegible]
SUBJECT T-Wall Reinf. (0+40 to 3+79.72, WL)		CHECKED BY	DATE

Reinforcement:

#5 - 22 x 56.83' x 1.043 = 1304
24 x 163.3' x 1.043 = 4088

#6 - 114 x 13.5' x 1.502 = 2312 vert
327 x 14.5' x 1.502 = 7122 vert
106 x 220.13' x 1.502 = 35047

#8 - 441 x 10' x 2.67 = 11775 trans bot

Total = 61648 lb

(Use 61700 lb)

PROJECT

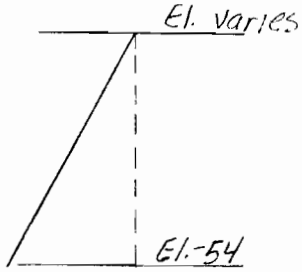
Page ___ of ___

SUBJECT Pile, Concrete Prestressed - Preliminary

CHECKED BY

DATE

0+40 to 3+79.72, W/L



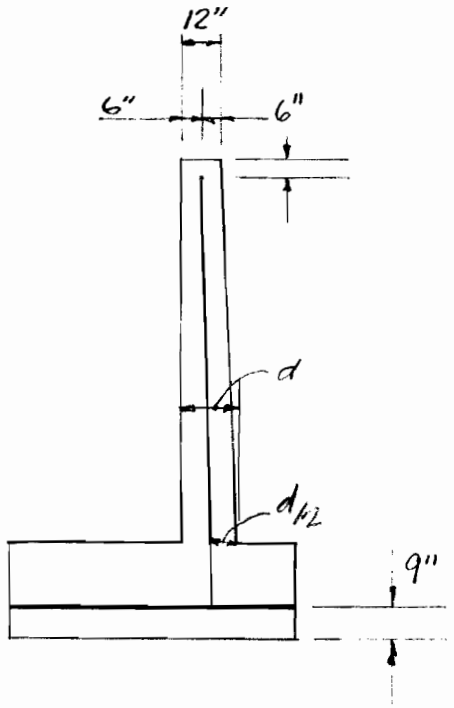
$Length = \Delta_{Elev}\sqrt{1 + 1/n^2}$

Monolith	ΔElev	No Piles	Batter	Pile Length	Length
3	54.5	15	2:1	61'	915'
		1	4:1	56'	56'
6	53.5	32	2:1	60'	1920'
		8	0	53.5	428'
7	53.5	14	2:1	60'	840'
		4	0	53.5'	214'
8	53.5	16	2:1	60'	960'
		3	4:1	55.5'	167'

Total = 5500'

(Use 5550')

PROJECT	Page __ of __		
SUBJECT T-Wall-Waterstops, 3-Bulb Type (or 40 to 3+79.72)		CHECKED BY	DATE



Typical, 3-Bulb Type Waterstop Detail

Length = 5(12 + 2.5 − 0.75 + 8) = 108.75 lf

(Use 110 lf)

PROJECT

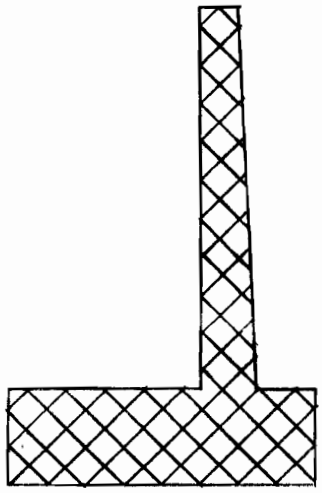
SUBJECT Construction Joint Material (0+40 to 3+79.72)

Page __ of __

CHECKED BY

DATE

Construction Joint Material



Typical Area

$$A = 5\left[(1/2)(12)\left(2+\frac{12}{24}\right) + 20\right] = 175 \text{ sf}$$

(Use 180 sf)