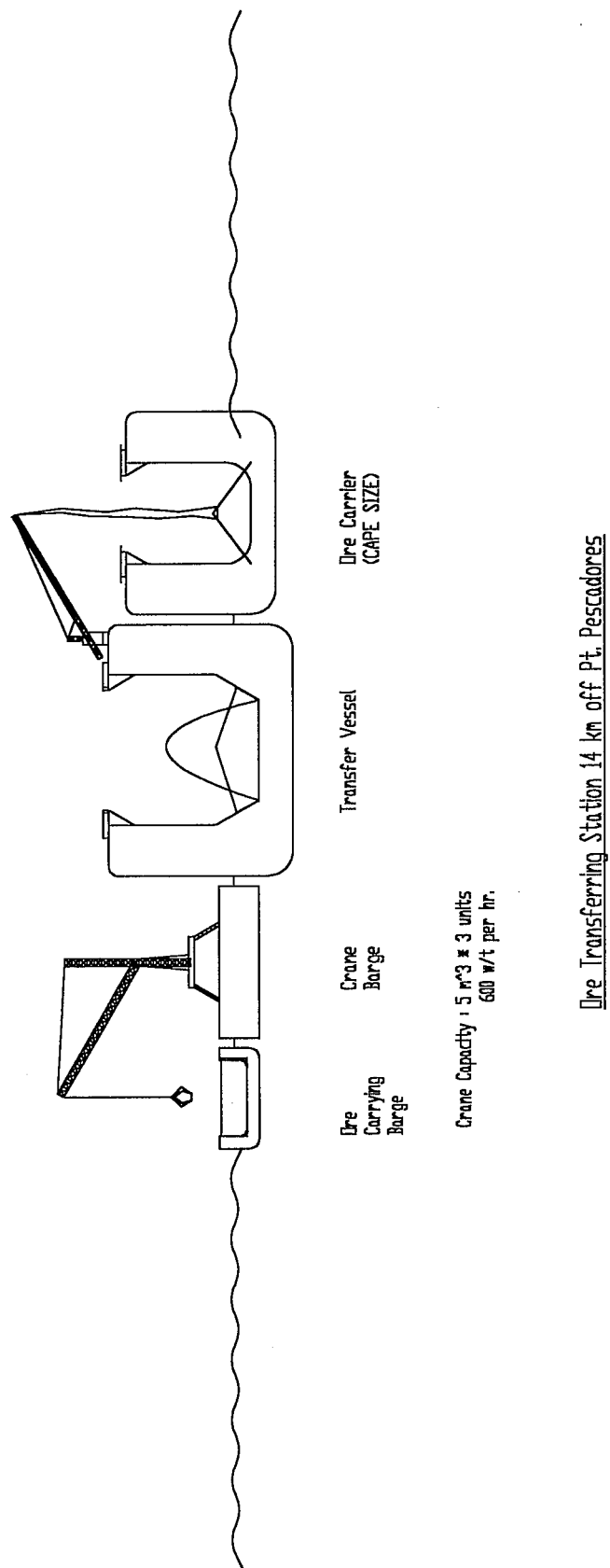




**Fig. 5-4-15 Sistema Propuesto para la Estación de Transferencia
(Alternativa – C2)**

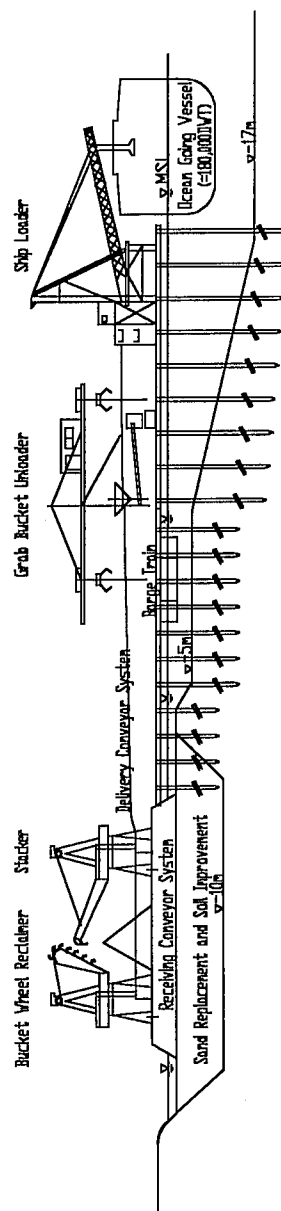
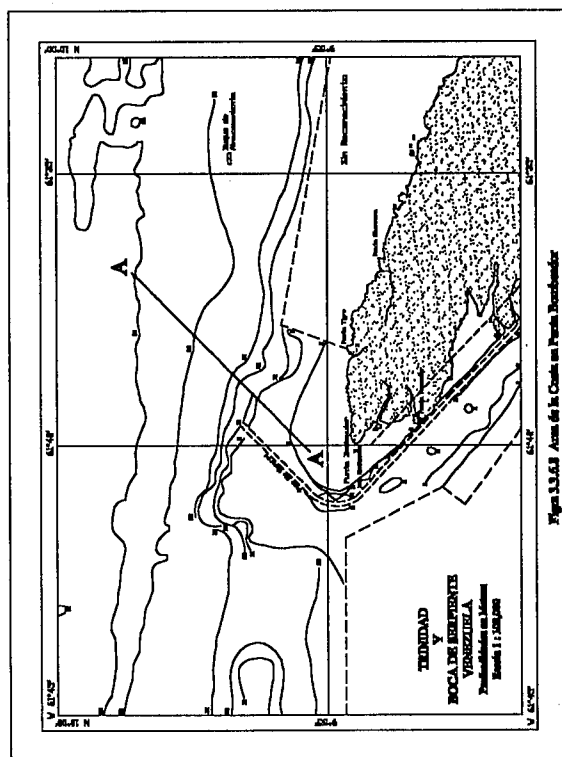
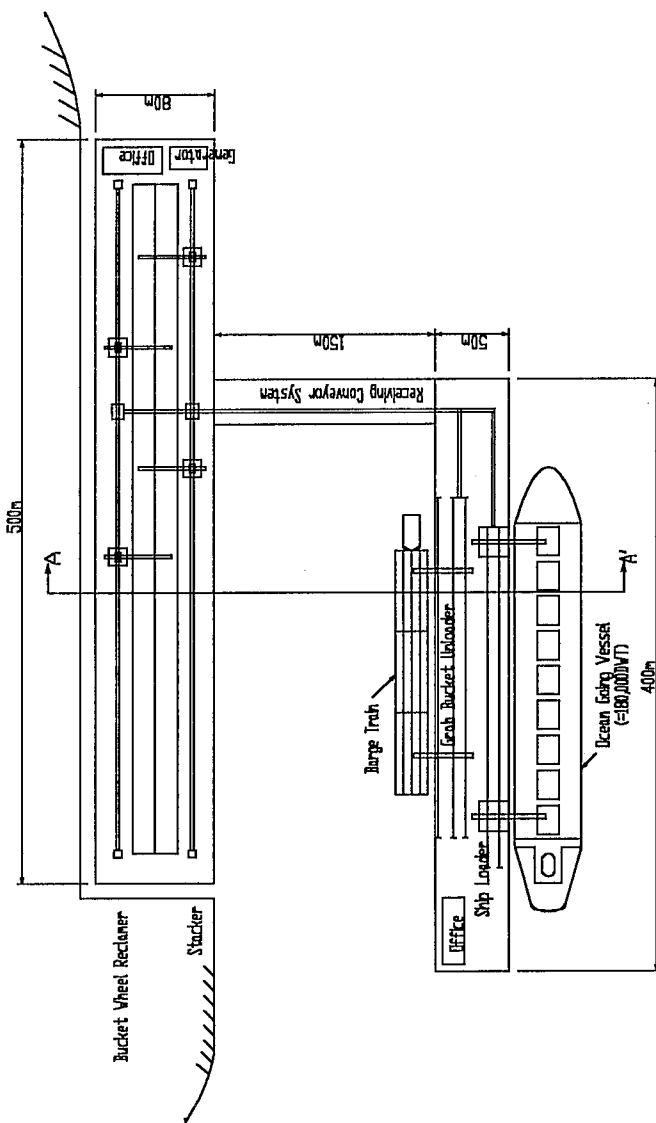


Fig. 5-4-16 Sistema Propuesto para el Puerto Nuevo (Alternativa - D1)

Tabla 5.4.14 Costo de Envío para las Posibles Alternativas

1. Unit Cost for Shipping

Type of Vessel	DWT	Pt. Ordaz		③Navigation	Port or T.V.	
		①Loading	② Port Accomodation		④ Port Accomodation	⑤Unloading
Barge	12000	2492	2935	3475	2935	2492
Smallhand	38000	7892	9295	13420	9295	7892
Handymax	45000	9346	12750	19650	12750	9346
Panamax	65000	13500	15900	23550	15900	13500
Capesize	150000	31154	36692	45332	36692	31154
		\$/1.5days	\$/day	\$/day	\$/day	\$/1.5days

2. Shipping Cost for Possible Alternatives

Unit: \$

		①	②	③	④	⑤	total	\$/ton	Present Value (million \$)
P1	①+②*1.5	13500	23850	70650	23850	13500	145350	2.236	120
P2	+③*3								
P3	+④*1.5	9346	19125	58950	19125	9346	115892	2.575	138
	+⑤	7892	13943	40261	13943	7892	83932	2.209	118
A1	①+②*1.5	9346	19125	29475			57946	1.288	69
A2	+③*1.5	13500	23850	35325			72675	1.118	60
A3		31154	55038	67998			154191	1.028	55
B1	①+②*1.5	9346	19125	29475	19125	9346	86417	1.920	103
B2	+③*1.5	13500	23850	35325	23850	13500	110025	1.693	91
B3	+④*1.5	2492	4403	5213	4403	2492	19004	1.584	85
B4	+⑤	2492	4403	5213	4403	2492	19004	1.584	85
C1	①+②*1.5 +③*2.25 +④*1.5 +⑤	13500	23850	52988	23850	13500	127688	1.964	105
C2	①+②*1.5	2492	4403	5213	4403	2492	19004	1.584	85
C3	+③*3	7892	13943	20131	13943	7892	63801	1.679	90
C4	+④*1.5	9346	19125	29475	19125	9346	86417	1.920	103
C5	+⑤	13500	23850	35325	23850	13500	110025	1.693	91
D1	①+②*1.5	2492	4403	5213	4403	2492	19004	1.584	85
D2	+③*1.5	7892	13943	20131	13943	7892	63801	1.679	90
D3	+④*1.5	9346	19125	29475	19125	9346	86417	1.920	103
D4	+⑤	13500	23850	35325	23850	13500	110025	1.693	91

Tabla 5.4.15**Alternativa D1****para Embarcaciones y Gabarras**

Item	Description	Quantity	Unit Cost (US\$)	Amount US\$ million)
1) Ship Loader	1500ton/hr at Prt Ordaz	1	1,245,000	1.2
2) Pier at River Mouth	Concrete Slab with Steel Pile(m	20,000	1720	34.4
	Office (m2)	450	404	0.2
3) Stock Pile Yard	Reclamation (m3)	200,000	11	2.2
	Sand Replacement (m3)	600,000	15	9.0
	Soil Improvement (m2)	46,000	60	2.8
	Yard Concrete Pavement (m2)	40,000	60	2.4
	Shore Protection (m2)	6,600	70	0.5
4) Barge Train	1800t	32	453,000	14.5
5) Tug Boat	6000 PS	4	4,571,000	18.3
6) Loading /Unloading system				
Unloading Facility	Grab Bucket Unloader 1500ton/	1	8,400,000	8.4
	Receiving Conveyor System 150	1	2,075,000	2.1
	Stacker 1500ton/hr	1	1,120,500	1.1
Loading Facility	Bucket Wheel Reclaimer 1800to	1	1,328,000	1.3
	Delivery Conveyor System 1800	1	2,905,000	2.9
	Ship Loader 1800ton/hr	1	1,494,000	1.5
7) Navigation Aid		25	20,000	0.5
8) Dredging	14km			40.6
Total cost				143.9

Alternativa C2**Para Gabarras y T.V.**

Item	Description	Quantity	Unit Cost (US\$)	Amount US\$ million)
1)Ship Loader	1500ton/hr at Prt Ordaz	1	1,245,000	1.2
2)Marine Barge	6000DWT	10	1,908,000	19.1
3)Tug Boat	6000PS	5	4,600,000	23.0
4)Crane Barge	6000ton/hr	2	2,857,000	5.7
5)Crane	200ton/hr (20t bucket type 30m	6	3,800,000	22.8
6)T.V	Transfer Vessel	1	30,000,000	30
7) Navigation Aid		25	20,000	0.5
Total cost				102.3