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Risk Analysis of the Influence of Work Methods, Equipment and K3, and Land Affected by the Community on the Implementation of the Coastal Safety Development Project on the Coastal Jakarta Bay Phase 6 Package 4

Kurniawan Widhitomo[1], Moh. Azhar[2], Sri Kustoyo Raharjo[3]
[1,2,3]Master of Civil Engineering, Universitas Tama Jagakarsa, Indonesia

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ABSTRACT
DKI Jakarta Province and its surroundings often experience flood events. The causes of flooding include increased rainfall intensity, large-scale land conversion and insufficient river capacity to accommodate flood discharge. In addition, land subsiversion in several locations of Jakarta Beach caused a storm that inundated residential areas and other strategic areas. Related to that, the construction of embankments and the construction of coastal safety needs to be carried out. In the implementation of the work there are problems such as the working method of Equipment, K3, Social community and land, the four problems do affect the time of project implementation, the scope of this research is carried out in the project package 4 coastal safety of the capital and the project is still running. The purpose of this study is to determine the influence of occupational safety risks, equipment, and the social influence of the community around the project on the implementation time. Meanwhile, data is taken either secondary (work reports or other literature, both secondary and primary).

Corresponding Author:
Kurniawan Widhitomo
Master of Civil Engineering, Universitas Tama Jagakarsa, Indonesia
kurniawan.widhitomo@gmail.com

INTRODUCTION

DKI Jakarta Province and its surroundings often experience flood events. The causes of flooding include increased rainfall intensity, large-scale land conversion and insufficient river capacity to accommodate flood discharge, and rob that inundated residential areas and other strategic areas. This activity is divided into 3 (three) zones, namely Zone A, Zone B and Zone C.

Coastal infrastructure development projects face various challenges, especially related to operational risks and environmental impacts. Various literatures support the importance of a thorough risk analysis to address various factors that can affect the smooth and successful operation of large-scale construction projects, especially in dense urban areas such as Jakarta Bay.

According to the Project Management Institute (PMI), construction project risks can be identified through quantitative and qualitative analysis approaches to evaluate their impact

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on project cost, time, and quality (Project Management Institute, 2017). This approach supports project management by providing a framework to address the uncertainties that arise, especially in projects involving local community conditions and the dependence on heavy equipment that was also identified in the coastal safety project in Jakarta Bay. The efficiency and effectiveness of equipment are the determining factors for the success of a construction project. According to Mardiaman (2023), equipment that is damaged or does not function optimally can hinder smooth operations and reduce the project's daily productivity. In the field, this coastal safety construction project faces significant obstacles due to damage to heavy equipment such as cranes and pontoons which cause delays in dredging work (Mardiaman, 2020). This underscores the importance of regular equipment maintenance and inspections to minimize the risk of delays.

In the context of construction work, the implementation of occupational health and safety (OHS) is very important to reduce the risk of accidents that can affect the running of the project. Ridley (2006) in the Overview of Occupational Health and Safety stated that the lack of detail in work methods and the absence of risk assessment in each activity can increase the likelihood of work accidents. In this project, the analysis of work methods and occupational safety was identified as a source of risk that had the potential to cause delays, so the application of more structured work methods and detailed risk evaluation were needed (Ridley, 2006). According to Gunawan (2012) in Construction Project Management, community involvement can minimize social barriers and assist project management in managing the expectations of the affected communities. Based on a survey conducted in the Jakarta Bay project, the surrounding community expressed concern about the impact of vibration, noise, and the risk of eviction. This emphasizes the need for transparency, fair compensation, and regular socialization to affected communities to reduce the potential for conflict (Gunawan, 2017). The following is a picture of the division of work zones:

Figure 1. Job Location

Draw the work plan as follows:

Figure 2. Work plan

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Various studies show that the success of construction projects is greatly influenced by risk management which includes work methods, equipment conditions, occupational health and safety, and social impacts on the surrounding community. This study enriches the study in construction risk management, especially in infrastructure projects in urban areas with high interaction with the surrounding environment and local communities. There are several problems that may affect project delays, namely:

1. Social issues
2. Equipment problems
3. Job safety

The purpose of the study is to determine the influence of occupational safety risks, equipment, and the social influence of the community around the project on the implementation time.

METHODS

The systematics of writing research is qualitative and quantitative, both observation data is disposed, then analyzed, and if necessary, questioner to obtain statistical data, related to the research.

RESULTS AND DISCUSSION

Spun Pile Piling

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SPUN PILE PILING DATA RECORD

COASTAL SAFETY DEVELOPMENT PROJECT ON THE COAST OF JAKARTA BAY PHASE 6 PACKAGE 4

BY: INSPECTOR

No	Date	SP Length	Zone	Description	Anchored Per Day	Total SP Staked	Information
1	Wednesday, 19 April 2023	24m	C	SP1	1	1	Trial Hoisting
2	Wednesday, 03 May 2023	24m	C	SP2 - SP4	3	4	Spun Pile Piling Using Innerboring Tools Start Slightly Noon
3	Thursday, 04 May 2023	24m	C	SP5 - SP8	4	8	
4	Friday, 05 May 2023	24m	C	SP9 - SP10	2	10	Matrial Spun Pile Stock in Pontoons Runs Out, Waiting for Curtains to Install

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5	Saturday, 06 May 2023	24m	C	SP11 - SP13	3	13	Solar Morning Innerboring Tool Runs Out Waiting for Solar, Start at Noon
6	Sunday, 07 May 2023	24m	C	SP14 - SP16	3	16	Afternoon Wait for Coordination of Pontoon Shift
7	Monday, 08 May 2023	24m	C	SP17 - SP20	4	20	
8	Tuesday, 09 May 2023	24m	C	SP21 - SP24	4	24	
9	Wednesday, 10 May 2023	24m	C	SP25 - SP29	5	29	
10	Thursday, 11 May 2023	24m	C	SP30 - SP34	5	34	
11	Friday, 12 May 2023	24m	C	SP35 - SP39	5	39	
12	Saturday, 13 May 2023	24m	C	SP40 - SP44	5	44	
13	Sunday, 14 May 2023	24m	C	SP45 - SP47	3	47	
14	Monday, 15 May 2023	24m	C	SP48 - SP50	3	50	
15	Friday, 09 June 2023	24m	C	SP51 - SP54	4	54	May 16 to June 8 Wait for Kamal Citizen Socialization
16	Saturday, 10 June 2023	24m	C	SP55 - SP58	4	58	
17	Monday, 12 June 2023	24m	C	SP59 - SP62	4	62	June 11 Closed
18	Tuesday, 13 June 2023	24m	C	SP63 - SP66	4	66	
19	Thursday, 15 June 2023	24m	C	SP67 - SP70	4	70	June 14 Replace the Fanbelt of the Inner Boring Tool
20	Saturday, 17 June 2023	24m	C	SP71 - SP75	5	75	June 16 Rainy Field Conditions
21	Sunday, 18 June 2023	24m	C	SP76 - SP80	5	80	
22	Monday, 19 June 2023	24m	C	SP81 - SP83	3	83	
23	Tuesday, 20 June 2023	24m	C	SP84 - SP87	4	87	

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24	Wednesday, 21 June 2023	24m	C	SP88 - SP91	4	91	
25	Thursday, 22 June 2023	24m	C	SP92 - SP95	4	95	Total in Zone C 95 Stems
26	Thursday, 21 September 2023	24m	A	SP96	1	96	First Planting in Zone A
27	Friday, 22 September 2023	24m	A	SP97 - SP99	3	99	
28	Saturday, 23 September 2023	24m	A	SP100 - SP101	2	101	Morning Innerboring Tool Damaged Hose
29	Sunday, 24 September 2023	24m	A	SP102 - SP104	3	104	Broken Tugboat
30	Monday, 25 September 2023	24m	A	SP105	1	105	Tugboat Damaged Commitment at 5 Ready Hour
31	Tuesday, 26 September 2023	24m	A	SP106 - SP109	4	109	
32	Wednesday, 27 September 2023	24m	A	SP110 - SP113	4	113	
33	Thursday, 28 September 2023	24m	A	SP114 - SP120	7	120	
34	Friday, 29 September 2023	24m	A	SP121 - SP124	4	124	
35	Wednesday, 04 October 2023	24m	A	SP125 - SP131	7	131	
36	Thursday, 05 October 2023	24m	A	SP132 - SP137	6	137	
37	Friday, 06 October 2023	24m	A	SP138 - SP145	8	145	
38	Saturday, 14 October 2023	24m	A	SP146	1	146	Morning Curtain Material and Waiting for the Installation
39	Sunday, 15 October 2023	24m	A	SP147 - SP153	7	153	

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40	Monday, October 16, 2023	24m	A	SP154 - 155	2	155	Auger Alat Inner Boring Macet
41	Wednesday, 18 October 2023	24m	A	SP156 - SP162	7	162	
42	Friday, 20 October 2023	24m	A	SP163	1	163	Start of staking at 16.00
43	Saturday, 21 October 2023	24m	A	SP164 - SP169	6	169	
44	Thursday, 02 November 2023	24m	A	SP170 - SP171	2	171	Morning Curtain Material Starts Piling at 13.00
46	Friday, 03 November 2023	24m	A	SP172 - SP179	8	179	
48	Sunday, 05 November 2023	24m	A	SP180 - SP181	2	181	
50	Monday, 06 November 2023	24m	A	SP182 - SP189	8	189	
52	Monday, 13 November 2023	24m	A	SP190 - SP197	8	197	
54	Tuesday, November 14, 2023	24m	A	SP198	1	198	Start staking at 09:00 after that curtain material because the stock in the pontoon runs out
56	Wednesday, 15 November 2023	24m	A	SP199 - 201	3	201	
58	Thursday, 16 November 2023	24m	A	SP202 - 209	8	209	
60	Friday, 17 November 2023	24m	A	SP210 - SP217	8	217	
62	Saturday, 18 November 2023	24m	A	SP218	1	218	Stake starts at 13.00
64	Monday, 20 November 2023	24m	A	SP219 - SP227	9	227	
66	Thursday, 23 November 2023	24m	A	SP228 - SP234	7	234	
68	Friday, 24 November 2023	24m	A	SP235 - SP237	3	237	Stake starts at 13.00
70	Saturday, 25 November 2023	24m	A	SP238 - SP244	7	244	
72	Sunday, 26 November 2023	24m	A	SP245	1	245	Stopped because Waiting for

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							Residents' Land Acquisition
73	Wednesday, 20 December 2023	24m	A	SP363	1	246	Piling Jumps to SP363 Because the Land Is Not Ready
74	Thursday, 21 December 2023	24m	A	SP362-359	4	250	Stopped because Waiting for Residents' Land Acquisition
75	Thursday, 11 January 2024	24m	A	SP246	1	251	At 15.00 Start Stake Can 1 Continue to Rain
76	Friday,12 January 2024	24m	A	SP247 - SP248	2	253	Morning continues at 08.00 Continue SP246 Continue Curtain material at 14.30 Start Pile SP247 &248 Then stop due to low tide
77	Saturday, 13 January 2024	24m	A	SP249 - SP250	2	255	At 14.00 Start Stake Can 1 Continue to Rain
78	Sunday, 14 January 2024	24m	A	SP251 - SP253	3	258	
79	Monday, January 15, 2024	24m	A	SP254 - SP255	2	260	
80	Tuesday, January 16, 2024	24m	A	SP256 - SP259	4	264	
81	Wednesday, 17 January 2024	24m	A	SP260 - SP266	7	271	
82	Thursday, January 18, 2024	24m	A	SP267 - SP273	7	278	
83	Thursday, January 25, 2024	24m	A	SP274 - SP280	7	285	
84	Sunday, January 28, 2024	24m	A	SP281 - SP287	7	292	
85	Tuesday, 30 January 2024	24m	A	SP288 - SP294	7	299	
86	Saturday, 03 February 2024	24m	A	SP295	1	300	Crane Material Boom Picked

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							Wednesday - Friday
87	Sunday, 04 February 2024	24m	A	SP296 - SP297	2	302	
88	Tuesday, 06 February 2024	24m	A	SP298 - SP301	4	306	
89	Thursday, 08 February 2024	24m	A	SP302 - SP304	3	309	
90	Friday, 09 February 2024	24m	A	SP305	1	310	
91	Friday, 16 February 2024	24m	A	SP306	1	311	
92	Saturday, February 17, 2024	24m	A	SP307 - SP309	3	314	
93	Sunday, 18 February 2024	24m	A	SP310 - SP312	3	317	
94	Monday, February 19, 2024	24m	A	SP313 - SP316	4	321	
95	Wednesday, 21 February 2024	24m	A	SP317 - SP 319	3	324	
96	Thursday, February 22, 2024	24m	A	SP320 - SP321	2	326	
97	Monday, February 26, 2024	24m	A	SP322 - SP323	2	328	
98	Tuesday, 27 February 2024	24m	A	SP324 - SP326	3	331	
99	Friday, 08 March 2024	24m	A	SP327 - SP329	3	334	
100	Sunday, March 10, 2024	24m	A	SP330 - SP333	4	338	
101	Monday, March 11, 2024	24m	A	SP334 - SP336	3	341	
102	Tuesday, 12 March 2024	24m	A	SP337 - SP340	4	345	
103	Saturday, 16 March 2024	24m	A	SP341 - SP342	2	347	
104	Sunday, 17 March 2024	24m	A	SP343 - SP345	3	350	
105	Tuesday, 19 March 2024	24m	A	SP346 - SP347	2	352	

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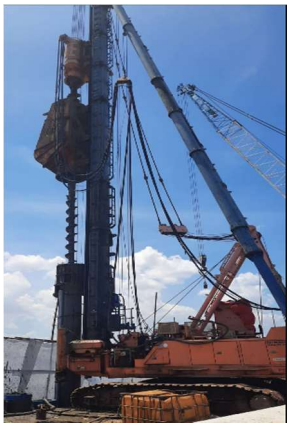
106	Wednesday, 20 March 2024	24m	A	SP348	1	353	
107	Thursday, 21 March 2024	24m	A	SP349 - SP351	3	356	
108	Friday, 22 March 2024	24m	A	SP352 - SP356	5	361	
109	Saturday, 23 March 2024	24m	A	SP357 - SP358	2	363	FINISH

Production Capacity Based on Direct Observation in the Field:

Crawler Crane			
	Variable	Parameter	Unit
	Type	-	
	Equipment Efficiency Factor (Fadt)	0,8	
	Lift Capacity	1	Pile
	Loading Time (T1)	3,283333333	Minutes
	Travel Time with Load (T2)	7,733333333	Minutes
	Cycle Time (Ts)	11,01666667	Minutes
	Production Capacity (Q)	4,357034796	Piles/Hour
	Equipment Coefficient	0,229513889	Hour
	Equipment Coefficient	1,836111111	day

Inner Boring and Pile Driving Rig			
	Variable	Parameter	Unit
	Type		
	Bore Pile Depth	24	m
	Bore Diameter	1,8	m
	Capacity (V)	1	Point
	Equipment Efficiency Factor (Fadt)	0,8	
	Bore Point Checking Time	1	Minutes
	Equipment Preparation Time	30	Minutes
	Tool Firmness Check Time	5,133333333	Minutes
	Drill Bit Connecting Time	12,71666667	Minutes
	Pre-boring Time	11,38333333	Minutes
	Cleaning Time	3,766666667	Minutes
	Top Hat Installation Time	1,916666667	Minutes
	Total Boring and Pile Driving Time	23,85	Minutes
	Pulling Drill Bit Time	2,346388889	Minutes
	Cycle Time (TS)	92,11	Minutes
	Production Capacity (Q)	0,52	Point/Hour
	Equipment Coefficient	1,919	Hour

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	Equipment Coefficient	15,352	day

Time Stamp Spun Pile Driving Based on Video			
HE Type	**Categories**	**Description**	**Time (s)**
Crawler Crane	Cycle Time (Move + Swing)	Before lifting	73
	Cycle Time (Connecting + Lifting)	Connecting the winch with spun pile	124
	Cycle Time (Swing)	After Connecting, Placing pile, Connector removal	464
Inner Boring Rig	Bore Point Checking Time		60
	Equipment Preparation Time (Bracing Installation)		1800
	Tool Firmness Check Time		308
	Drill Bit Connecting Time		763
	Pre-boring Time		683
	Cleaning Time		226
	Top Head Installation Time		115
	Total Boring and Pile Driving Time		1431
Spun Pile Mobilization	Mobilization of Spun Pile to the Pontoon		2400
Total Cycle Time for 1 Spun Pile (min)			140,7833333

Working Hours (Min)	480
Cycle Time For 1 Pile (Min)	70,78333333
Bracing Intallation Time (Min)	30
Spun Pile Mobilization (Min)	40
Number of Pile in 1 Day	5,792323993

Field Real Pile Production Capacity

Number of Days	Number of Rods	Real Bar Production Capacity Per Day
335	363	1,08358209

Stake Production Capacity Based on Shcedule Contract

Number of Days	Number of Rods	Rod Production Capacity Per Day Schedule
303	363	1,198019802

Contract Deviation Vs Real

Number of Days	Number of Rods	Bar-Day Production Capacity -Real Contract
32	363	0,114437712

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Real Vs Contract Production Capacity (Rod)

Production Capacity Per Day	Number of Stems Per Day
Real	1,08358209
Contract	1,198019802
Deviation	0,114437712

Real Vs Contract Production Capacity (Days)

Production Capacity	Number of Days
Real	335
Contract	303
Deviation	32

Number of Stems Per Day

Production Capacity Per Day	Number of Stems Per Day
Real	1,08358209
Contract	1,198019802
Observation	5,792323993

Rod Per Heart Vs Time

Production Capacity Per Day	Number of Stems Per Day	Time
Real	1,08358209	335
Contract	1,198019802	303
Observation	5,792323993	62,66914634

Time Efficiency Compared to Observation

Production Capacity Per Day	Time (Days)	Efficiency
Real	335	272,3308537
Contract	303	240,3308537
Observation	62,66914634	0

Real Time Efficiency Vs Observation

Production Capacity Per Day	Time (Days)	Efficiency
Real	335	272,3308537
Observation	62,66914634	

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Contract Time Efficiency Vs Observation

Production Capacity Per Day	Time (Days)	Efficiency
Contract	303	240,3308537
Observation	62,66914634	

Square pile productivity

Based on observations:

Crawler Crane with Pile Drive Hammer			
	**Variable**	**Parameter**	**Unit**
	Type	-	
	Equipment Efficiency Factor (Fadt)	0,8	
	Lift Capacity	60,24	Ton
	Loading Time (T1)	8,183333333	Minutes
	Travel Time with Load (T2)	10,78333333	Minutes
	Cycle Time (Ts)	28,83333333	Minutes
	Production Capacity (Q)	100,2839306	Ton/Hour
	Equipment Coefficient	0,009971687	Hour
	Equipment Coefficient	0,001246461	day

Time Stamp Spun Pile Driving Based on Video			
HE Type	**Categories**	**Description**	**Time (s)**
Crawler Crane (Material Mobilization)	Cycle Time (Move + Swing)	Before lifting	83
	Cycle Time (Connecting + Lifting)	Connecting the winch with square pile	143
	Cycle Time (Swing)	After Connecting, Placing pile, Connector removal	378
	Material Hauling	Crossing the river	840
	Cycle Time (Move + Swing)	Before lifting	112
	Cycle Time (Connecting + Lifting)	Connecting the winch with square pile	163
	Cycle Time (Swing)	After Connecting, Placing pile, Connector removal	378
Crawler Crane (Pile Drive Hammer)	Bore Point Checking Time		60
	Equipment Preparation Time		300
	Pile Drive Hammer Connecting Time		491
	Hammer Connecting to Square Pile		274
	Hammering Time		532
	Welding Time (Connecting 2 piles)		721
	Hammering Time		115
	Disconnecting Hammer		244

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Total Cycle Time for 1 Spun Pile (min)	80,56666667

Working Hours (Min)	480
Cycle Time For 1 Pile (Min)	45,61666667
Spun Pile Mobilization (Min)	34,95
Number of Pile in 1 Day	9,756302521

Based on the real data as follows:

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RECORD DATA ON SQUARE PILE PILING ZONE A PIER COASTAL SAFETY DEVELOPMENT PROJECT ON THE COAST OF JAKARTA BAY PHASE 6 PACKAGE 4
BY : INSPECTOR

No	Date	Square Pile Length	Zone	Description	Anchored Per Day	Total CCSP Staked	Information
1	Sunday, January 28, 2024	10m + 10m	A	L38-A			L38-A Breaks Up and Plans to Move Point
2	Wednesday, January 31, 2024	10m + 10m	A	L38-B		0	L38-B Breaks Up and Plans Move Point Defended
3	Friday, 02 February 2024	10m + 10m	A	L37-B, L36-B	2	2	
4	Saturday, 03 February 2024	10m + 10m	A	D17-E, D16-E, D15-E	3	5	
5	Sunday, 04 February 2024	10m + 10m	A	D17-D, D14-E	2	7	
6	Monday, 05 February 2024	10m + 10m	A	D13-E, D12-E, D18-D, D18-E	4	11	
7	Tuesday, 06 February 2024	10m + 10m	A	L36-C, L35-C	2	13	

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8	Wednesday, 07 February 2024	10m + 10m	A	L34-C, L37-C, L38C	3	16	
9	Friday, 09 February 2024	10m + 10m	A	L35-B, L34-B, L33-B	3	19	
10	Saturday, February 10, 2024	10m + 10m	A	L32-B, L33-C, L32-C	3	22	
11	Sunday, 11 February 2024	10m + 10m	A	L31-C, D16-D, D15-D	3	25	
12	Monday, February 12, 2024	10m + 10m	A	D14-D, D13-D, D12-D,D11-D	4	29	
13	Tuesday, 13 February 2024	10m + 10m	A	L37-A, L36-A, L35-A, L34-A	3	32	L35-A Breaks Up and Plans Move Point Defends
14	Thursday, 15 February 2024	10m + 10m	A	L33-A, L32-A, L30-C, L29-C, L28 C	5	37	Day 14 Presidential Election Holiday
15	Friday, 16 February 2024	10m + 10m	A	L27-C, L26-C, L31-B, L30-B, L29-B	5	42	
16	Saturday, February 17, 2024	10m + 10m	A	L28-B, L27B, L26B, D10-D, D9-D	5	47	
17	Sunday, 18 February 2024	10m + 10m	A	D8-D, D7-D, D6-D, D5-D, D11-E,D10E	6	53	
18	Monday, February 19, 2024	10m + 10m	A	D9D, D8E, D7E, D6E, D5E	5	58	
19	Tuesday, 20 February 2024	10m + 10m	A	L31A, L30A, L29A, L28A, L27A, L26A	6	64	
20	Wednesday, 21 February 2024	10m + 10m	A	D4D, D3D, D2D, D1D	4	68	
21	Thursday, February 22, 2024	10m + 10m	A	D4E, D3E, D2E, D1E, L25C, L24C, L23C	7	75	

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22	Friday, 23 February 2024	10m + 10m	A	D22C, D21C, D20C	3	78	Top Pile Repair
23	Saturday, February 24, 2024	10m + 10m	A	L25B, L24B, L23B, L22B, L25A, L24A	6	84	
24	Sunday, 25 February 2024	10m + 10m	A	L23A, L22A, L21A, L20A, L19C, L18C	6	90	
25	Monday, February 26, 2024	10m + 10m	A	L17C, L16C, L15C, L14C	4	94	Crane Service Alternate Repair
26	Tuesday, 27 February 2024	10m + 10m	A	L19A, L18A, L17A	3	97	
27	Wednesday, 28 February 2024	10m + 10m	A	L16A, L15A, L14A, L13C, L12C	5	102	
28	Thursday, 29 February 2024	10m + 10m	A	L11C, L10C, L9C	3	105	
29	Friday, 01 March 2024	10m + 10m	A	L18C, L13A, L12A, L11A, L10A	5	110	
30	Saturday, 02 March 2024	10m + 10m	A	L9A, L8A, L7C, L6C, L5C, L4C	6	116	
31	Monday, 04 March 2024	10m + 10m	A	L3C, L2C, L7A, L6A, L5A, L4A	6	122	
32	Tuesday, 05 March 2024	10m + 10m	A	L3A, L2A, L1C, L1A	4	126	
33	Wednesday, 06 March 2024	10m + 10m	A	L35A, L39C, L40C, L41C	4	130	L35A Fixed
34	Thursday, 07 March 2024	10m + 10m	A	L39A, L40A, L41A, L39B, L38A	5	135	L38A Fixed
35	Friday, 08 March 2024	10m + 10m	A	L38B, L42C, L43C, L44C	4	139	L38B has been fixed

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36	Saturday, 09 March 2024	10m + 10m	A	L45C	1	140	
37	Sunday, March 10, 2024	10m + 10m	A	L46C, L47C, L42A, L43A, L44A, L45A	6	146	
38	Wednesday, March 13, 2024	10m + 10m	A	L46A, L45A, L48C, L49C, L50C, L48A	6	152	
39	Thursday, March 14, 2024	10m + 10m	A	L49A, L50A, L51C, L53C, L54C, L55C	7	159	
40	Friday, 15 March 2024	10m + 10m	A	L56C, L51A, L52A, L53A, L54A	5	164	
41	Saturday, 16 March 2024	10m + 10m	A	55A, 56A, 57C, 58C, 59C	5	169	
42	Sunday, 17 March 2024	10m + 10m	A	L57A, L58A, L59A, L60A, L60C	5	174	FINISH

Field Real Pile Production Capacity		
Number of Days	Number of Rods	Real Production Capacity Per Day
40	174	4,35

Days Required		
Planting Plan	Based on Observation	Days Required Based on Observations on Lap
174	9,756302521	17,83462532

Field Efficiency

Production Capacity Per Day	Time (Days)	Efficiency (Days)
Real	40	
Observation	18	
Total		22

CCSP Production

Ccsp Hoisting Schedule

No	Piling	2023			2024								
		Okt	Nov	Des	Jan	Feb	Mar	Apr	Mei	Jun	Jul	Agt	Sept
		10	11	12	13	14	15	16	17	18	19	20	21
1	W 400	89	89	89	89	89	89	89	89	89	89	89	89

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2	W450					88	88	89	89	89	89	89	89

CCSP Plan Until May

No	Piling	2023			2024					Total Target
		Okt	Nov	Des	Jan	Feb	Mar	Apr	Mei	
		10	11	12	13	14	15	16	17	
1	W 400	89	89	89	89	89	89	89	89	712
2	W450					88	88	89	89	354

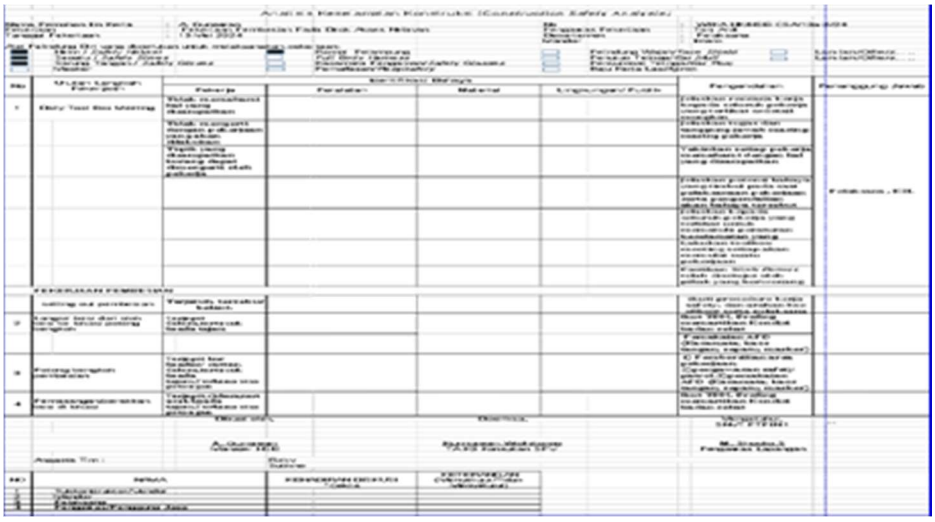
Target Vs Real

No	Piling	Total Target	Real	Deviation
1	W 400	712	276	-436
2	W450	354	275	-79

CCSP Installation Production Capacity Per Day Based On Field Data

No	Piling	Sum	Day	Rod / Day
1	W 400	276	33	8,363636364
2	W450	275	33	8,333333333

Working Methods / CSA



CSA Format image without hazard column list

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CSA Format Image with Hazard column

In the construction safety analyst form, it can be seen that the work method is less detailed and there is no danger or risk column as a result, detailed method is very necessary to anticipate accidents during implementation, where if an accident occurs it will have an impact on the implementation time. For example, the addition of a hazard column is indispensable and detailing the work method during implementation.

Community Conditions

The condition of the community around the project greatly affects the continuity of the coastal retaining embankment project. Such as related to the demolition of houses in the area where the project is located or being hit by the installation path of spun pile or ccsp, or others related to the coastal retaining embankment. We conducted a direct survey of the community around the project with 51 people with the following results:

No	The two biggest scores	Nilai	
		Angka	Persen
1	Approve the development	30	59%
	Strongly agree	9	17%
2	Beneficial Development	27	53%
	development is very beneficial	23	45%
3	Dismantling problems	37	73%
	The problem of lack of compensation for demolition	12	23%
4	Heritage House Status	20	39%
	Status of Own Home	19	37%
5	Status of Girik Land	40	78%
	Land status unknown	10	20%
6	worried about being displaced	27	53%
	worried about not staying in the village	19	37%
7	non-intrusive development	19	37%
	disruptive development	17	33%
8	impact (vibration, noise, dust)	35	69%

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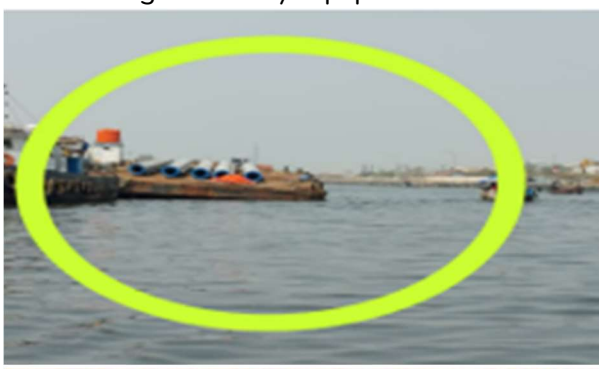
vibration impact alone	13	25%

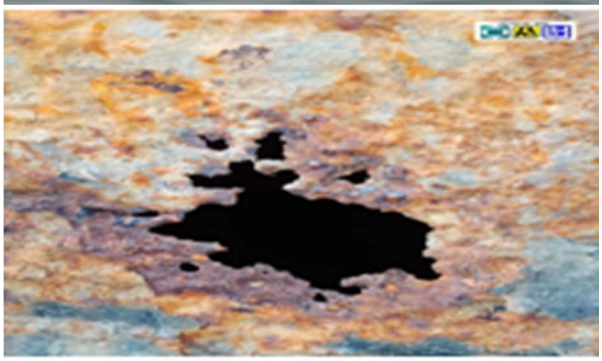
Largest Survey Score 2

Graph image of the two largest scores

Equipment Condition

Damage to heavy equipment such as cranes and ships:






Equipment condition pictures

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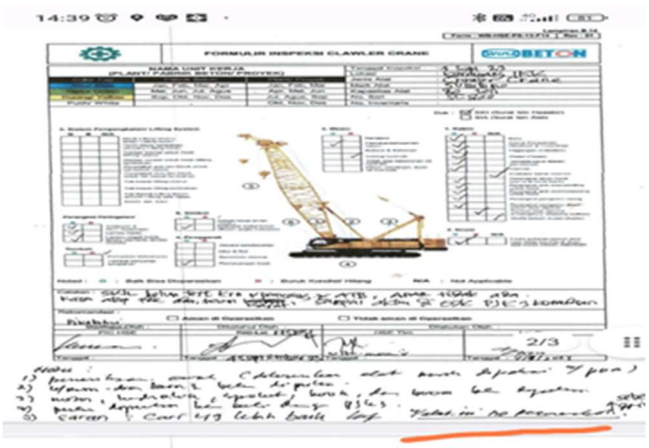

Equipment Inspection Pictures

The image of the crane is not strong to suck

The existence of damaged or old tools that are still in use greatly affects productivity, piling up spun piles, etc.

CONCLUSION

The project encounters several significant challenges that can impact its implementation and timely completion. The primary issue is the land status, which involves demolition, compensation, and environmental impacts like vibration and dust. Additionally, the absence of detailed Construction Safety Analysis (CSA) and Job Safety Analysis (JSA) work methods heightens the risk of work accidents, potentially causing material losses, casualties, and hindering project targets. The suboptimal condition of construction equipment, such as cranes and pontoons, further elevates the risk of accidents and delays. Social challenges, including community concerns related to evictions and environmental disturbances, add complexity to the project. Production efficiency also lags behind, with discrepancies between scheduled pile production capacity and actual field results, indicating obstacles to be addressed. The collective state of community relations, equipment, work methods, and CSA/K3 (Safety, Health, and Environment) standards interrelate, directly impacting project timelines. To enhance project success, several actions are recommended: developing more detailed work methods to mitigate work accidents and improve efficiency, performing regular maintenance on construction equipment to ensure optimal operation and minimize the risk of accidents and costly delays, and increasing community engagement to communicate project benefits and mitigation efforts. Furthermore, affected communities should receive prompt and fair compensation, with all land issues settled before the project begins to prevent future disruptions. The participation of all stakeholders, including community members, government agencies, security forces, and law enforcement, is essential for supporting the progress of this national strategic project. Additionally, fair compensation and, if necessary, alternative housing should be provided for those impacted by the project. Lastly, regular monitoring and

evaluation of project progress are necessary to ensure that production targets are met on schedule.

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