Appendix 24F
Pile Driving Specifications for New Bridges on Haul Routes

Tables 24F-1 through 24F-3 provide information about use of pile drivers for pier installation at new bridges that would be built to serve project-related haul routes. The results shown in these tables were used in the analysis in Chapter 24, *Noise and Vibration,* and describe impact driving requirements, as noise levels from impact driving are higher than vibratory driving. However, vibratory methods would be used where possible. It is anticipated that piers would be installed using both impact and vibratory pile driving methods. Due to the length and complexity of this information, and in an effort to maintain the readability of Chapter 24, this information is presented in an appendix. The tables appear in the following order.

- Table 24F-1. Piles and Piers for New Bridges on Haul Routes for Central Alignment Alternatives (Alternatives 1, 2a, 2b, and 2c)
- Table 24F-2. Piles and Piers for New Bridges on Haul Routes for Eastern Alignment Alternatives (Alternatives 3, 4a, 4b, and 4c)
- Table 24F-3. Piles and Piers for New Bridges on Haul Routes for the Bethany Reservoir Alternative (Alternative 5)

Table 24F-1. Piles and Piers for New Bridges on Haul Routes for Central Alignment Alternatives (Alternatives 1, 2a, 2b, and 2c)

Purpose of Access	Bridge	Crossing	Impact-Driven Piles	Diameter (inches)	Strikes/ Pile (10 per minute)	Total Strikes	Total Minutes (impact driving only)	Total Hours (impact driving only)	Impact Driven Piles/ Day	Total Days of Pile Installation (includes equipment set up time)	Average % of Time That Impact Drivers Would Be Active during Pile Installation Days
Access to intake haul road along Hood-Franklin Road	Widen Hood-Franklin Bridge Existing: 32 feet wide, 2 lanes	Snodgrass Slough	26	16	150	3,900	390	7	6	5	12%
Access road to Bouldin Island tunnel reception and launch shaft	State Route 12 Bridge over Little Potato Slough Existing bridge: 48 feet wide, two 12-foot paved lanes with 10-foot shoulders with a median barrier	Little Potato Slough	42	24	150	6,300	630	11	2	21	4%
Access road to Bouldin Island tunnel reception and launch shaft	State Route 12 Bridge over a farm road (east of new Bouldin Island access road interchange) Existing: 44 feet wide, two 12-foot paved lanes with 10-foot shoulders with median barrier	Farm road	16	24	150	2,400	240	4	4	4	8%
Access Road to Bouldin Island tunnel reception and launch shaft	New bridge over State Route 12 to access Bouldin Island	State Route 12	26	72	150	3,900	390	7	1	26	2%

Purpose of Access	Bridge	Crossing	Impact-Driven Piles	Diameter (inches)	Strikes/ Pile (10 per minute)	Total Strikes	Total Minutes (impact driving only)	Total Hours (impact driving only)	Impact Driven Piles/ Day	Total Days of Pile Installation (includes equipment set up time)	Average % of Time That Impact Drivers Would Be Active during Pile Installation Days
Access road to Mandeville Island Tunnel Maintenance shaft and Bacon Island reception shaft (access route to Mandeville Island site passes by Bacon Island site)	New bridge overpass over BNSF tracks and EBMUD Mokelumne Aqueducts to replace 22-foot wide undercrossing of South Holt Road with two 11-foot lanes with no shoulders	BNSF tracks and EBMUD Mokelumne Aqueducts	88	72	150	13,200	1,320	22	10	9	20%
Mandeville Island tunnel maintenance shaft access road	New bridge	Connection Slough	90	72	150	13,500	1,350	23	2	45	4%
Access road to Southern Complex west of Byron Highway	New bridge to overpass to North Bruns Road	Realigned Bryon Highway	56	72	150	8,400	840	14	8	7	17%
Access road to Southern Complex west of Byron Highway	New bridge across realigned Byron Highway	Realigned Bryon Highway	0 (CIDH piles)	N/A	N/A	N/A	0	0	0	0	N/A
Access road from Intake B to Intake A, Alternative 2a ONLY (7,500 cfs)	New bridge over a drainage channel	Drainage channel	50	16	150	7,500	750	13	6	9	12%

BNSF = BNSF Railway; cfs = cubic feet per second; CIDH = cast-in-drilled-hole; EBMUD = East Bay Municipal Utility District; N/A = not applicable.

Table 24F-2. Piles and Piers for New Bridges on Haul Routes for Eastern Alignment Alternatives (Alternatives 3, 4a, 4b, and 4c)

Purpose of Access	Bridge	Crossing	Impact-Driven Piles	Diameter (inches)	Strikes/ Pile (10 per minute)	Total Strikes	Total Minutes	Total Hours	Impact Driven Piles/ Day	Total Days of Pile Installation (includes equipment set up time)	Average % of Time That Impact Drivers Would Be Active during Pile Installation Days
Access to intake haul road along Hood-Franklin Road	Widen Hood-Franklin Bridge Existing: 32 feet wide, 2 lanes	Snodgrass Slough	26	16	150	3,900	390	7	6	5	12%
Access road to Lower Roberts Island tunnel reception shaft and launch shaft	New bridge over Burns Cut	Burns Cut	50	24	150	7,500	750	13	6	9	12%
Access road to Southern Complex west of Byron Highway	New bridge across Re-aligned Byron Highway	Realigned Bryon Highway	0 (CIDH piles)	N/A	N/A	N/A	0	0	0	0	N/A
Access road to Lower Roberts Island tunnel reception shaft and launch shaft	New bridge over Black Slough	Black Slough	6	24	150	900	90	2	6	1	17%
Access road from Intake B to Intake A, Alternative 4a ONLY (7,500 cfs)	New bridge over a drainage channel	Drainage channel	50	16	150	7,500	750	13	6	9	12%

cfs = cubic feet per second; CIDH = cast-in-drilled-hole; N/A = not applicable.

Table 24F-3. Piles and Piers for New Bridges on Haul Routes for the Bethany Reservoir Alternative (Alternative 5)

Purpose of Access	Bridge	Crossing	Impact-Driven Piles	Diameter (inches)	Strikes/ Pile (10 per minute)	Total Strikes	Total Minutes	Total Hours	Impact Driven Piles/ Day	Total Days of Pile Installation (includes equipment set up time)	Average % of Time That Impact Drivers Would Be Active during Pile Installation Days
Access to intake haul road along Hood-Franklin Road	Widen Hood-Franklin Bridge Existing: 32 feet wide, 2 lanes	Snodgrass Slough	26	16	150	3,900	390	7	6	5	12%
Access road to Lower Roberts Island double launch shaft	New bridge over Burns Cut	Burns Cut	50	24	150	7,500	750	13	6	9	12%
Lindemann Interchange access road to Bethany Complex	New bridge across realigned Byron Highway	Re-aligned Bryon Highway	36	24	150	5,400	540	9	6	6	13%
Lindemann Interchange access road to Bethany Complex	New bridge across UPRR track	UPRR track	24	24	150	3,600	360	6	6	4	13%
Mountain House Road bypass	New bridge over swale	Swale	30	24	150	4,500	450	8	5	6	11%

UPRR = Union Pacific Railroad.