

River bridge on piles, NH EPC package (illustrative)

Primavera P6 programme · 162 activities · 285 logic links · files: P6 XER, MS Project XML, PDF

The project

Bridge	8 spans x 40 m (320 m), two lanes; supports A1, P1-P7, A2
Foundations	76 bored cast-in-situ piles, 1.2 m dia (2,352 m); initial test pile with vertical and lateral load tests
Substructure	Pile caps, pier shafts in two lifts, pier caps on truss, bearing pedestals
Superstructure	40 precast PSC I-girders from a 3-bed casting yard, crane erection, cross girders, deck slab, crash barriers, 9 expansion joints
Approaches	250 m each side: RE walls, embankment, GSB, WMM, DBM and BC, approach slabs
Resources	2 piling rigs in the river and 1 on land; shutter and truss sets moving pier to pier; 1 crane pair; 2 deck shutter sets
Calendars	6-day week with holidays; river-bed works closed 15 Jun-30 Sep; earthwork and bituminous closed Jul-Aug
Contract	Appointed Date 2 Nov 2026; Scheduled Completion Date 1 Nov 2028 (730 days, illustrative)

Results

Planned completion	16 May 2028, 5.6 months before the SCD
Milestone-I (35%)	16 Jul 2027: 10% stage payments required, 56% planned
Milestone-II (60%)	14 Jan 2028: 35% stage payments required, 93% planned
Milestone-III (85%)	15 Jul 2028: 70% stage payments required, 100% planned

What to notice

- The monsoon decides this job: pier P4's piling is cut off on 15 June and resumes in October, which puts P4 on the critical path. Starting the river piles two weeks earlier, or a third rig by April, takes it off.
- The Authority's Engineer's drawing reviews (15 days, up to 30 for a major bridge, Clause 10.2) sit in the logic in front of the works they hold up.
- Girders are cast once both supports of a span have their first shaft lift, so 40 girders are not stacked in the yard for months.
- The monthly cash flow (Part III) comes from the same file and is checked against the Schedule-J stage-payment thresholds.

Programme: summary bar chart by pier and span

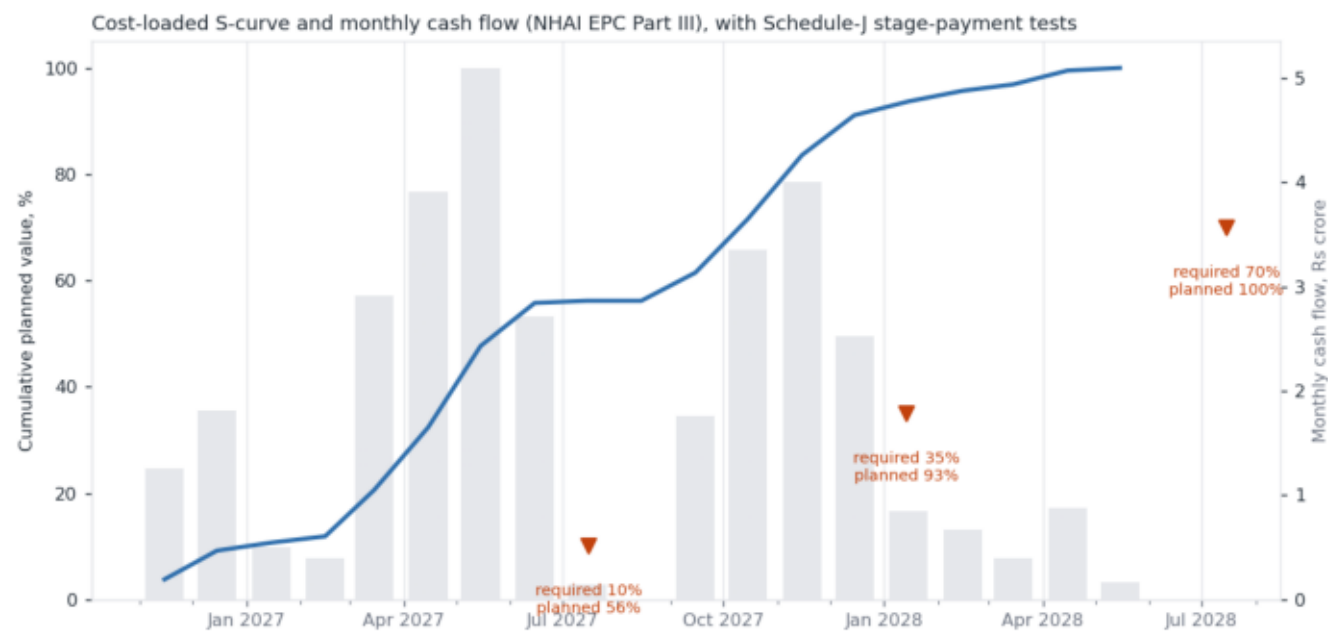
Red = critical path · blue = monsoon closure for river-bed works · dashed = Schedule-J milestones and SCD



The P6 file carries 162 activities with activity codes for location, element and crew.

Cost-loaded S-curve, monthly cash flow and Schedule-J checks

NHAI EPC Clause 10.1(iii) Part III asks for a monthly cash flow forecast



Schedule-J	Date	Required	Planned
Milestone-I (35%)	16 Jul 2027	10%	56%
Milestone-II (60%)	14 Jan 2028	35%	93%
Milestone-III (85%)	15 Jul 2028	70%	100%
Scheduled Completion Date (730th day)	1 Nov 2028	100%	100%

Stage payment statements must reach 10%, 35% and 70% of the Contract Price by Milestones I, II and III (35%, 60% and 85% of the construction period). The cost-loaded programme shows each test before it is due. Costs here are illustrative.

Month	Planned value	Cumulative
2026-11	Rs 1.26 Cr	4%
2026-12	Rs 1.81 Cr	9%
2027-01	Rs 0.50 Cr	11%
2027-02	Rs 0.40 Cr	12%
2027-03	Rs 2.91 Cr	21%
2027-04	Rs 3.91 Cr	32%

Month	Planned value	Cumulative
2027-05	Rs 5.10 Cr	48%
2027-06	Rs 2.71 Cr	56%
2027-07	Rs 0.14 Cr	56%
2027-09	Rs 1.76 Cr	62%
2027-10	Rs 3.36 Cr	72%
2027-11	Rs 4.00 Cr	84%

Month	Planned value	Cumulative
2027-12	Rs 2.52 Cr	91%
2028-01	Rs 0.85 Cr	94%
2028-02	Rs 0.67 Cr	96%
2028-03	Rs 0.40 Cr	97%
2028-04	Rs 0.88 Cr	100%
2028-05	Rs 0.17 Cr	100%

Where each duration comes from

A selection of activities; every activity carries its basis in its notes

Activity	Duration	Basis (from the activity notes)
Geotechnical investigation: 9 boreholes (2 rigs)	16 d	9 boreholes x 3.5 d / 2 rigs = 15.8 d [contractor cycle norm: 3-4 d per hole]
AE review and approval: foundation drawings	30 d	NHAI EPC Cl. 10.2(iv)(c): Authority's Engineer review 15 days, up to 30 days for major bridges
Initial test pile, 1.2 m dia (land, near A1)	3 d	fixed: 3 days [contractor cycle norm: 1-2 d + curing]
Kentledge set-up for initial vertical load test	7 d	28-day pile curing as 24 working-day lag; set-up ~1 week [contractor cycle norm]
P1: working piles (8 x 1.2 m dia, ~32 m)	24 d	8 piles x 3.0 d per pile per rig = 24.0 d [contractor cycle norm: 2-3 d/pile/rig]
P1: pile cap (~108 cum)	6 d	dry pile cap cycle 5-6 days [contractor cycle norm]
P1: pier shaft, starter and lift 1	5 d	4-5 days per lift [contractor cycle norm]; +1 day after pile cap
P1: pier cap on truss (~80 cum)	10 d	pier cap on truss 9-11 days [contractor cycle norm]; +3 days after last lift
Cast PSC I-girders for span 1 (5 nos, 40 m, 3 beds)	6 d	5 girders / 3 beds x 3 d per bed cycle = 5 d, +1 d stressing stage [contractor cycle norm]; paced to shaft lift 1 at A1 and P1
Span 1: erection of girders (5 nos, 2 cranes)	4 d	3-4 days per span [contractor cycle norm]; girders $\geq$ 18 working days after casting (final stressing); pier cap $\geq$ 10 working days old
Span 1: cross girders and diaphragms	5 d	~5 days [contractor cycle norm]
Span 1: deck slab (~129 cum)	18 d	~3 weeks per span [contractor cycle norm]; 2 deck shutter sets
Span 1: crash barriers and kerbs (LHS + RHS)	5 d	~4 days per run [contractor cycle norm]; after 7-day deck lag
Expansion joints (9 nos, strip seal)	25 d	9 joints x 5 d / 2 crews = 22.5 d [contractor cycle norm: ~5 d per joint]
A1 approach: RE wall (2 x 150 m)	70 d	fixed: 70 days (panels + reinforced fill)

Critical path

Mobilisation, site office and labour camp → Survey, TBM and pile layout → Geotechnical investigation: 9 boreholes (2 rigs) → Foundation design and GFC drawings (piles, pile caps) → Initial test pile, 1.2 m dia (land, near A1) → Kentledge set-up for initial vertical load test → Initial vertical load test → Initial lateral load test → Load test report and approval of pile capacity → P1: working piles (8 x 1.2 m dia, ~32 m) → P2: working piles (8 x 1.2 m dia, ~32 m) → P3: working piles (8 x 1.2 m dia, ~32 m) → P4: working piles (8 x 1.2 m dia, ~32 m) → P4: PCC levelling course under pile cap → P4: pile breaking to cut-off level → P4: pile integrity tests (8 piles) → P4: pile cap (~108 cum) → P4: pier shaft, starter and lift 1 → P4: pier shaft, lift 2 → P4: pier cap on truss (~80 cum) → Span 4: erection of girders (5 nos, 2 cranes) → Span 4: cross girders and diaphragms → Span 4: deck slab (~129 cum) → Span 6: deck slab (~129 cum) → Span 8: deck slab (~129 cum) → Span 8: crash barriers and kerbs (LHS + RHS) → Expansion joints (9 nos, strip seal) → Bituminous wearing coat on deck → Drainage spouts, railings and road furniture on bridge → Road markings, signage, punch list and joint inspection