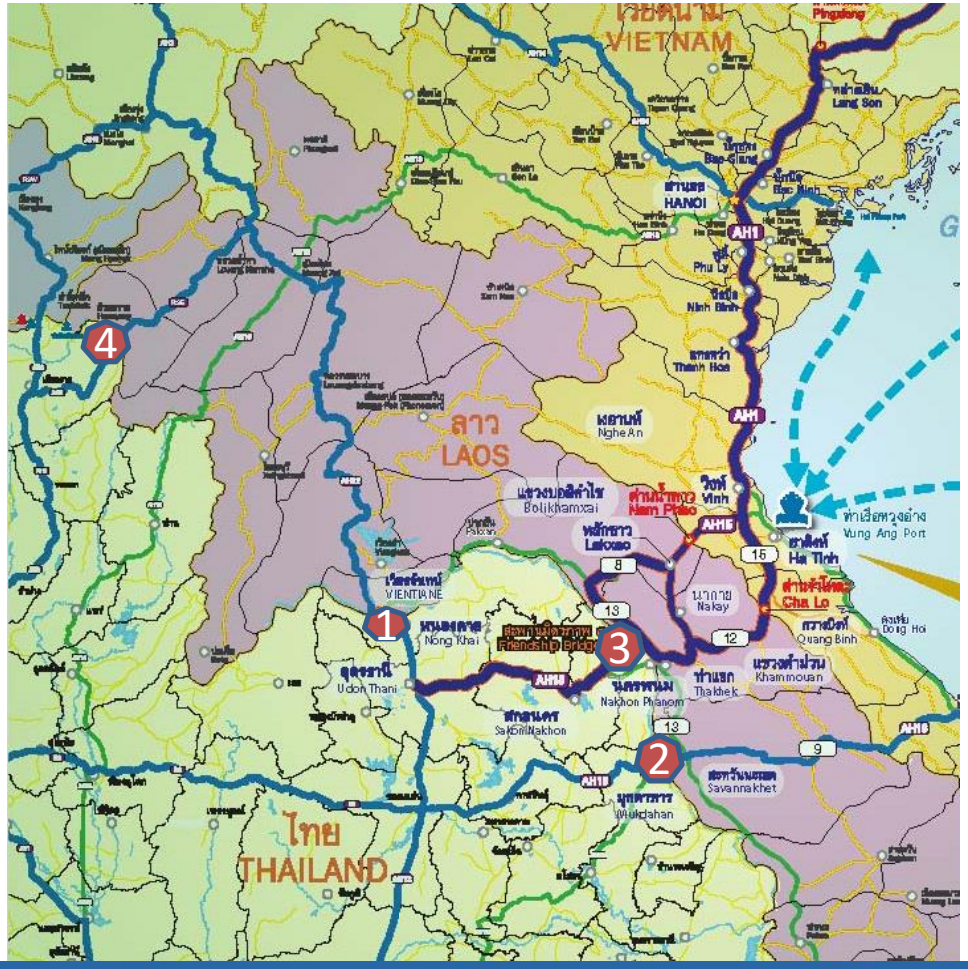
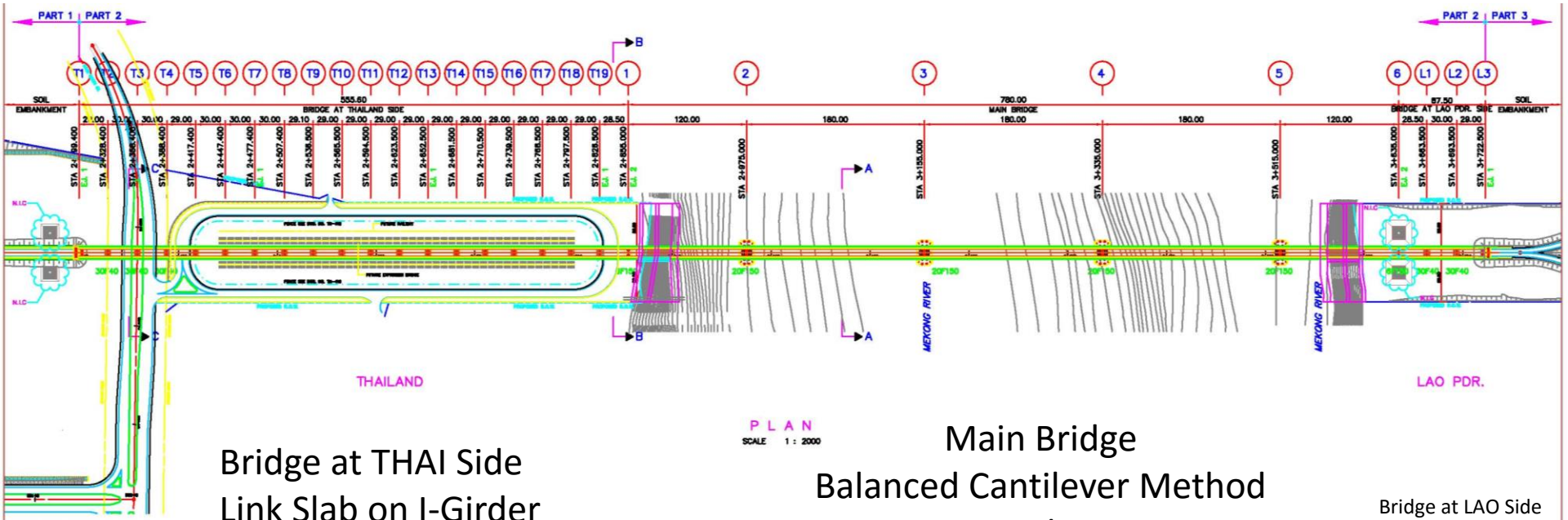
MEKONG BRIDGE CONSTRUCTION PROJECT AT NAKHONPHANOM

Thai-Lao Friendship Bridge



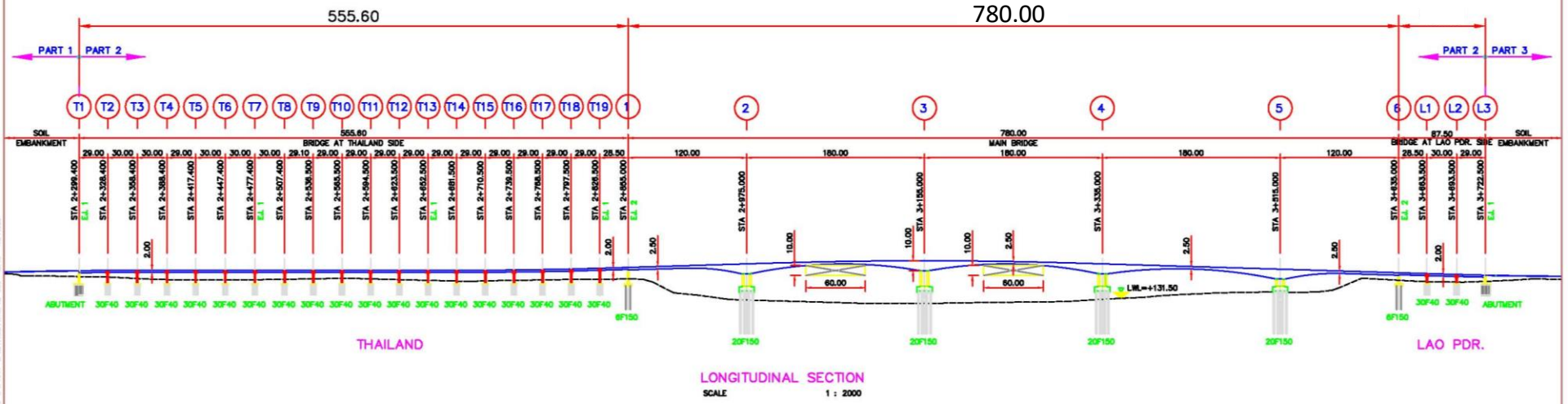
Construction Method



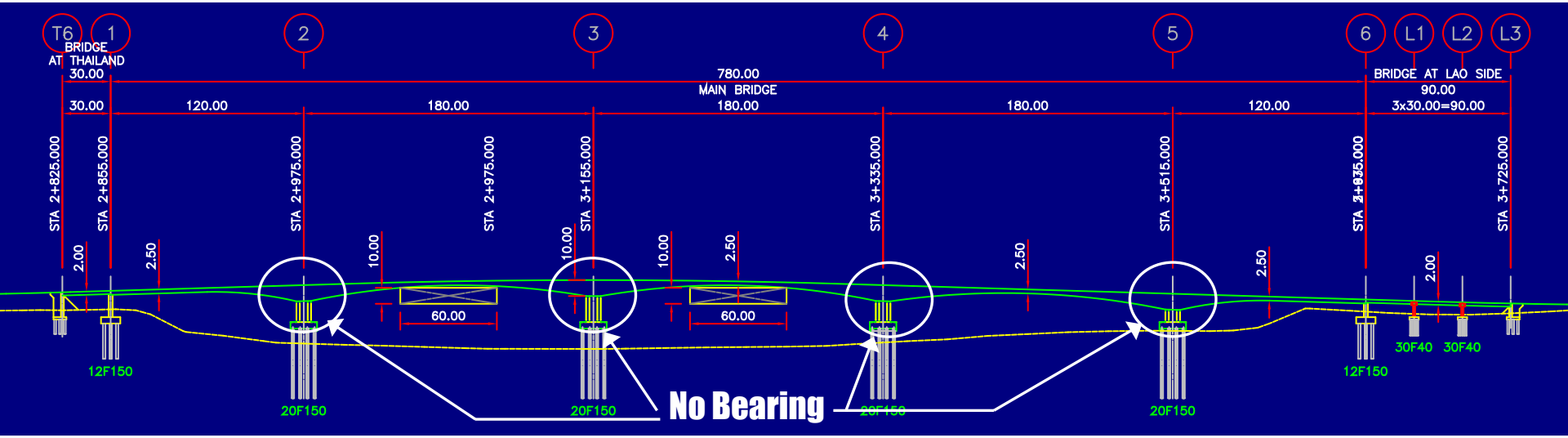
Bridge at THAI Side
Link Slab on I-Girder

Main Bridge
Balanced Cantilever Method
Form Traveler System

Bridge at LAO Side
Link Slab on I-Girder



Main Bridge



Type of Girder : Cast in Situ Pre-stress Concrete Box Girder

No. of Span : 5 Spans

Span Length : Main Span 3 @ 180 m., Side Span 120 m.

Total Length : 780 m.

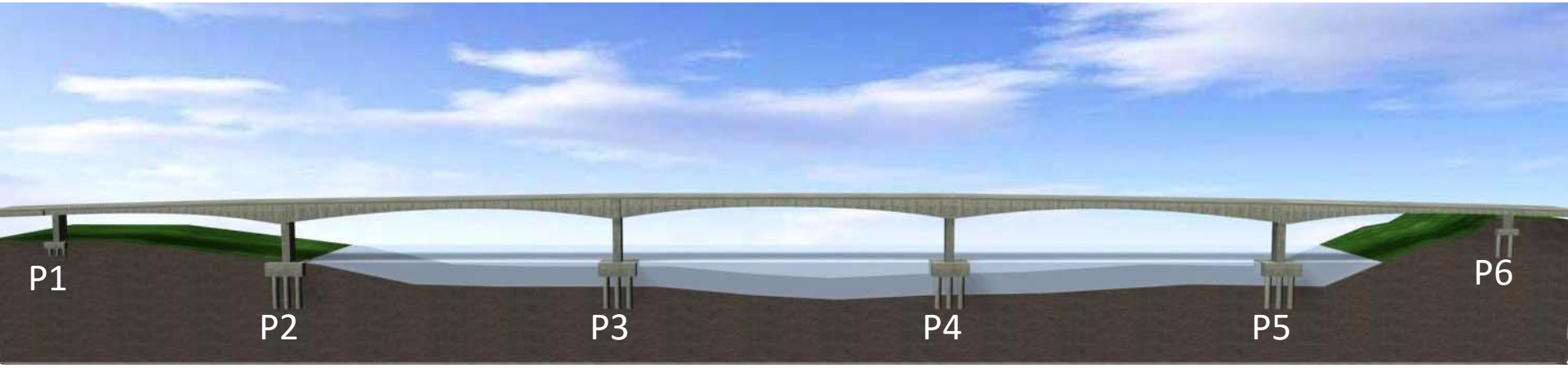
Construction Method : Balanced Cantilever

Box Girder vary depth 2.5-10 m.

Pre-stress : 0.6" Strands,
19 Strands/Tendon
32 Tendons/Web

FORMATION OF BRIDGE

Main bridge construction Sequence



Balanced cantilever construction

- ***Two center piers are constructed and join first***
- ***Then, the P2 and P5 piers***

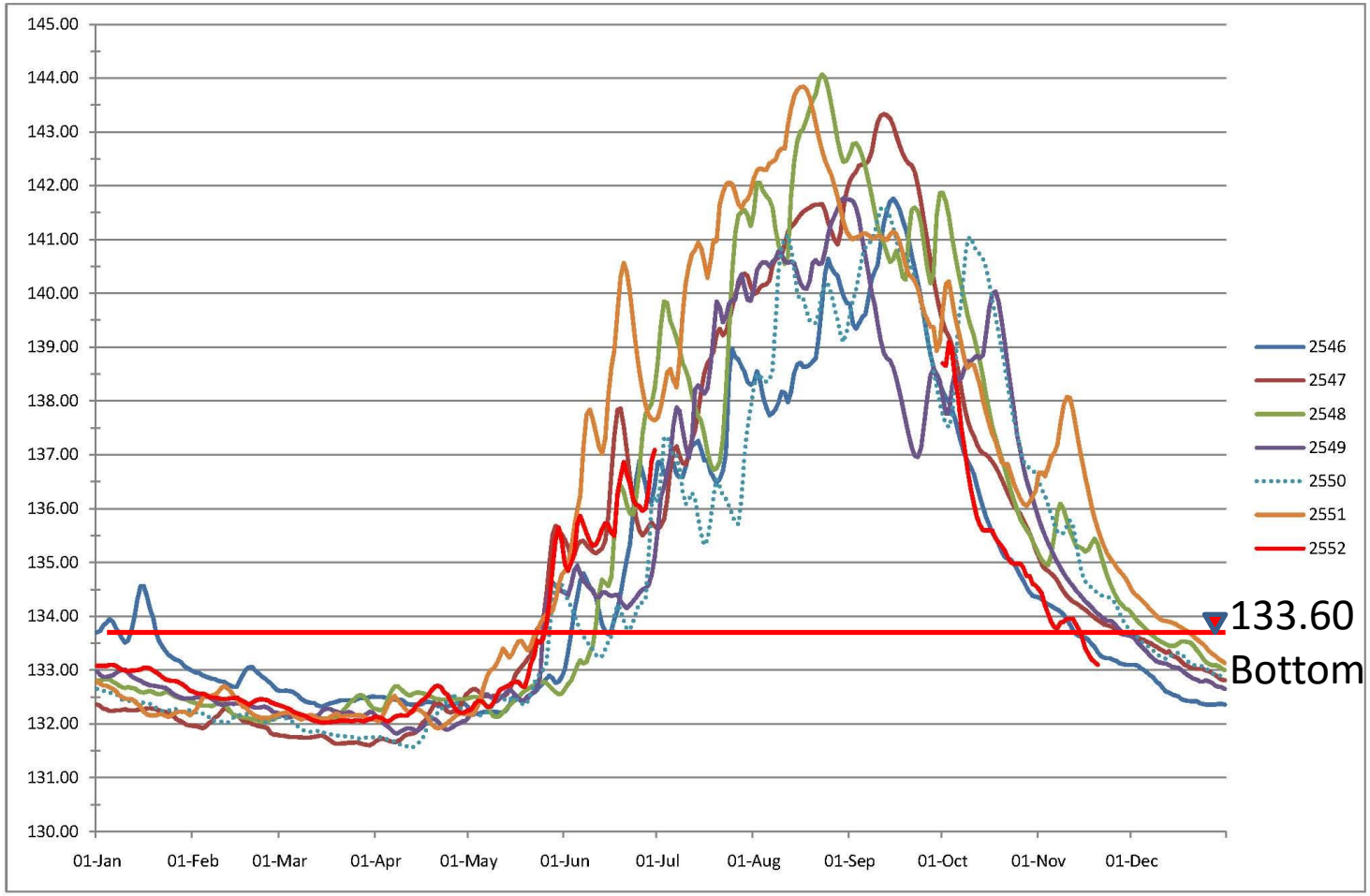
The sequence is so order to minimize the effect of creep and shrinkage in bridge deck.

2 Lane carriageway, 2 x 3.50 m. width
Central median 0.50 m
Shoulder width 1.00 m. both sides
Sidewalk 1.05 m. both sides

Bore Pile :	**Dia.1.50 m.**
	58 m. length (Approx.)
	safe load 850 T.
Column :	**Two Flexible Legs**
Box Girder	**vary depth 2.5-10 m.**

Section of Mekong Bridge

Mekong Water Level



Jetty & Plat Form

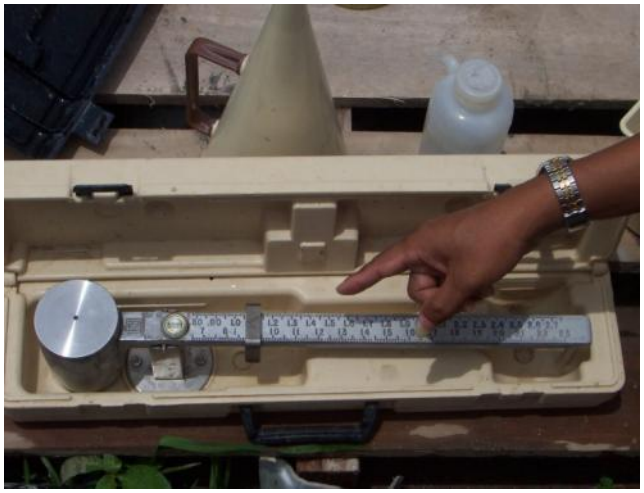
Steel Casing

Position & Level Check

Drilling

Properties of drilling fluid, **Bentonite**

Viscosity >37sec

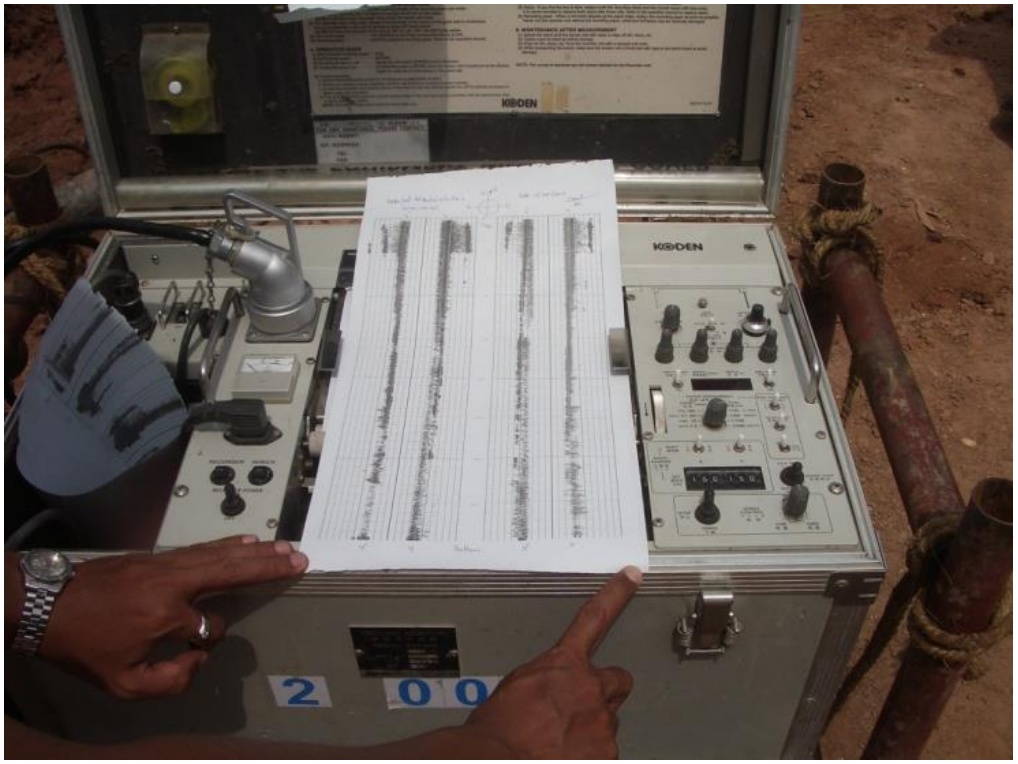


Density <1.05g/ml

pH 9-10

Sand Content <5%

Drilling Monitor



Control and measure the inclination, dimension and depth of the borehole.

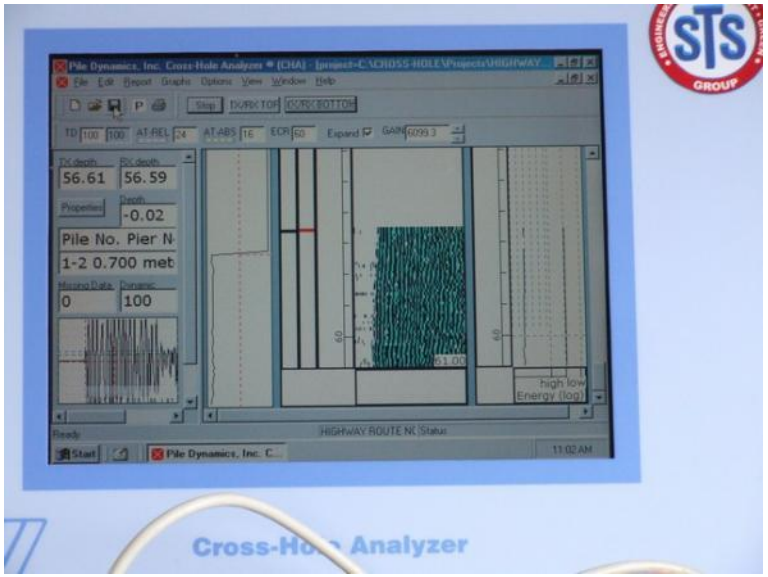
Desander

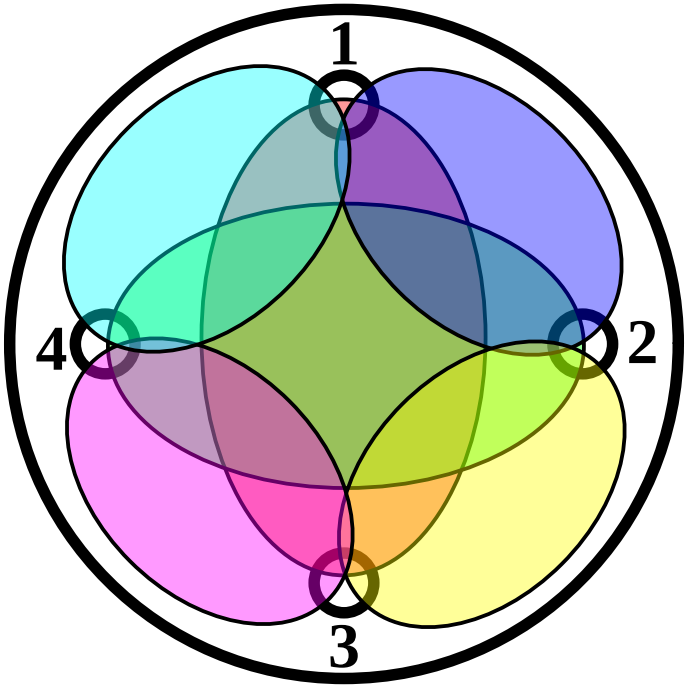
Clean up all mud or sedimentation at the bottom of borehole.

Reinforcing Steel Cage

Pouring Concrete

Integrity testing of the pile. (Sonic Logging Test)





Compaction Grouting

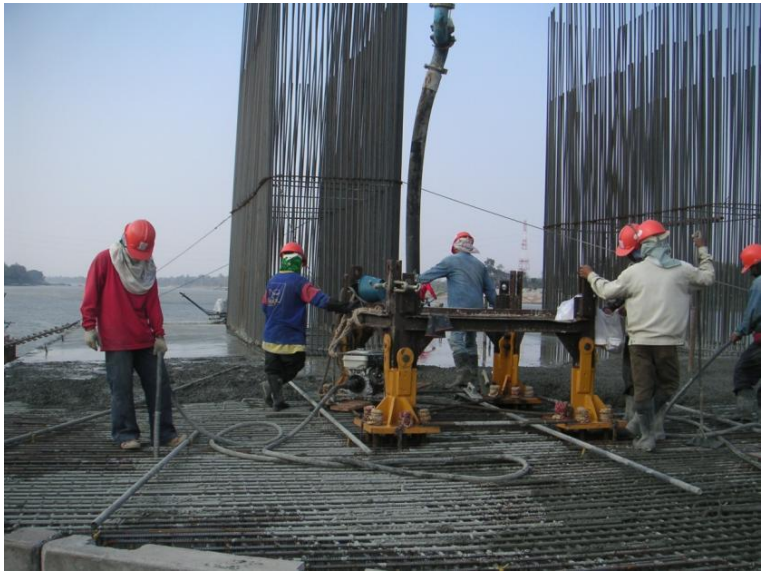
Static Load Test

Dynamic Load Test

Precast Panel

Pilecap Reinforcement

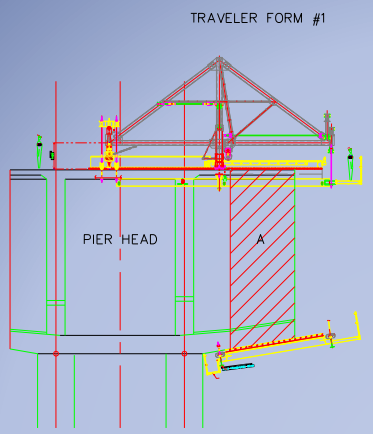
Casting Concrete



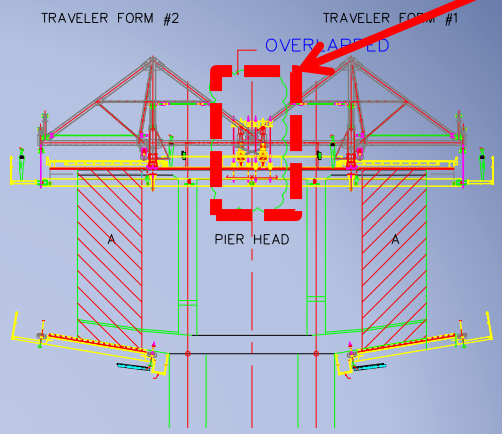
Column

MAIN BRIDGE SUPERSTRUCTURE

OVERLAPPED



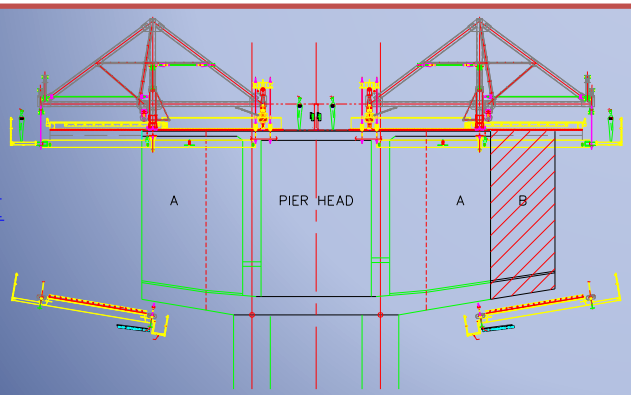
STAGE 1
–INSTALL TRAVELER FORM #1



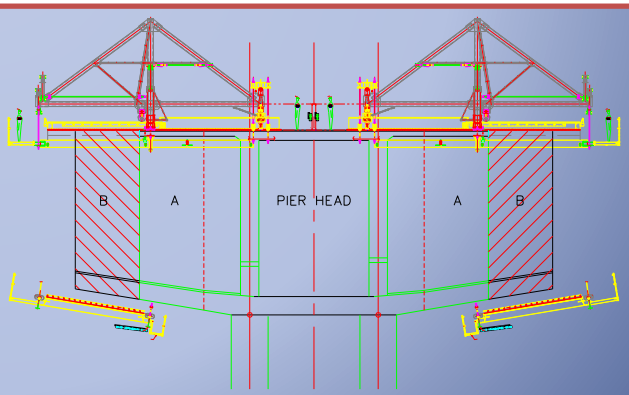
STAGE 2
–INSTALL TRAVELER FORM #2

เท Segment A พร้อม Pier head เพื่อแก้ปัญหาการติดตั้ง Traveler form 2 ตัวซ้อนกัน

PROPOSE

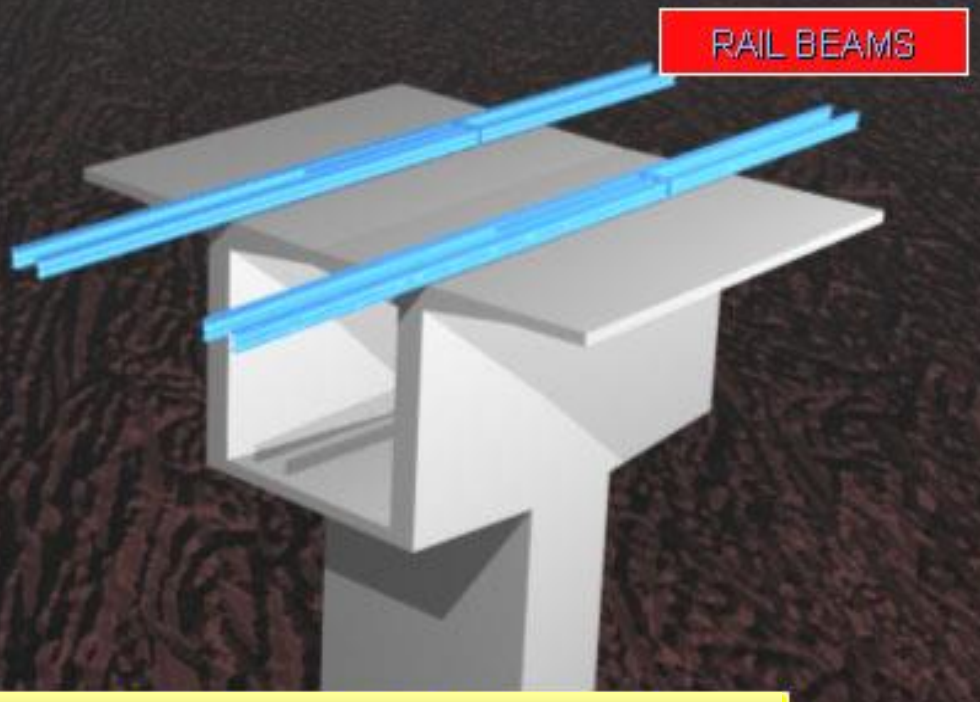


STAGE 1
–INSTALL TRAVELER FORM #1
–CAST SEGMENT B



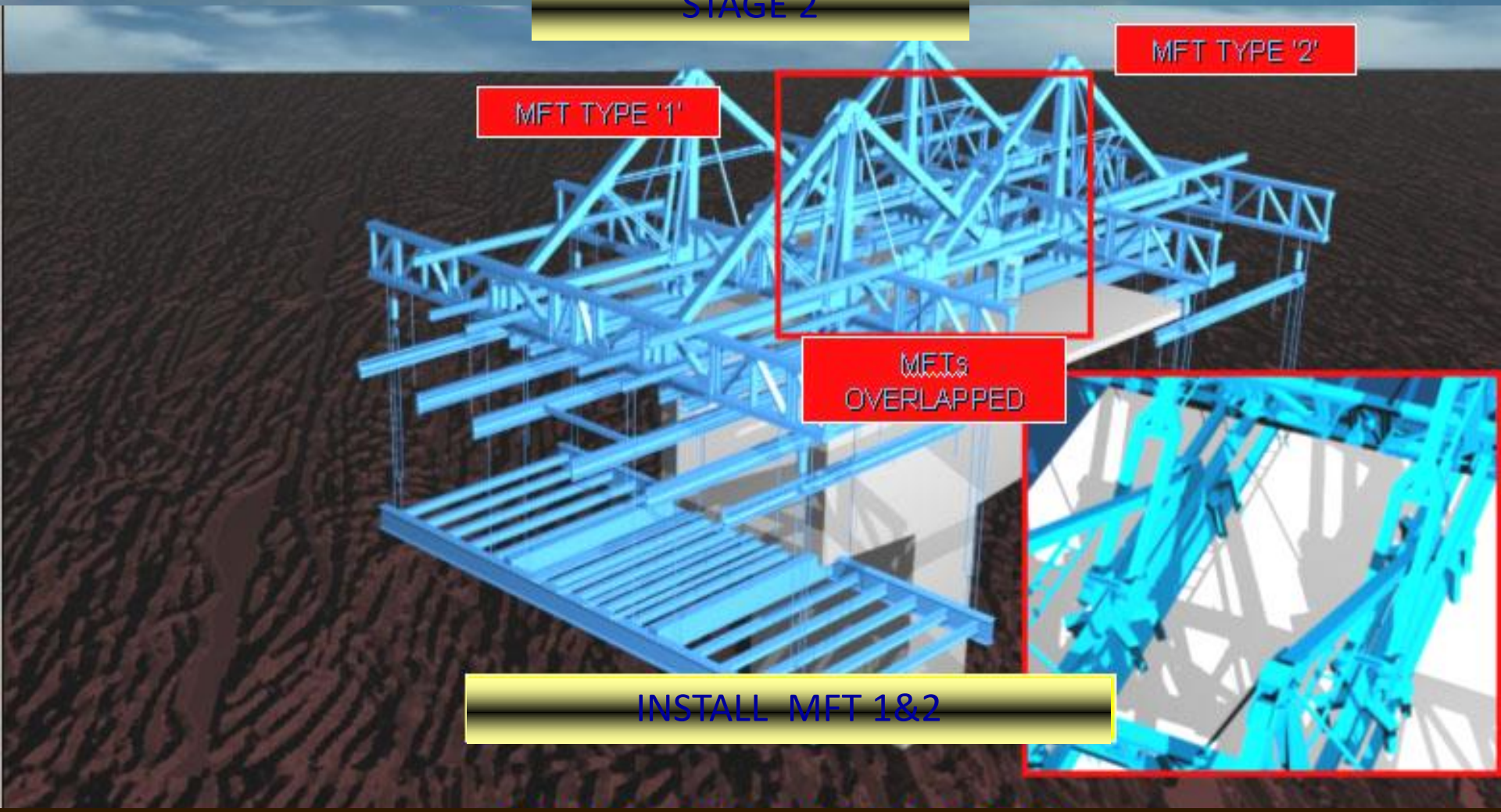
STAGE 2
–INSTALL TRAVELER FORM #2
–CAST SEGMENT B

STAGE 1

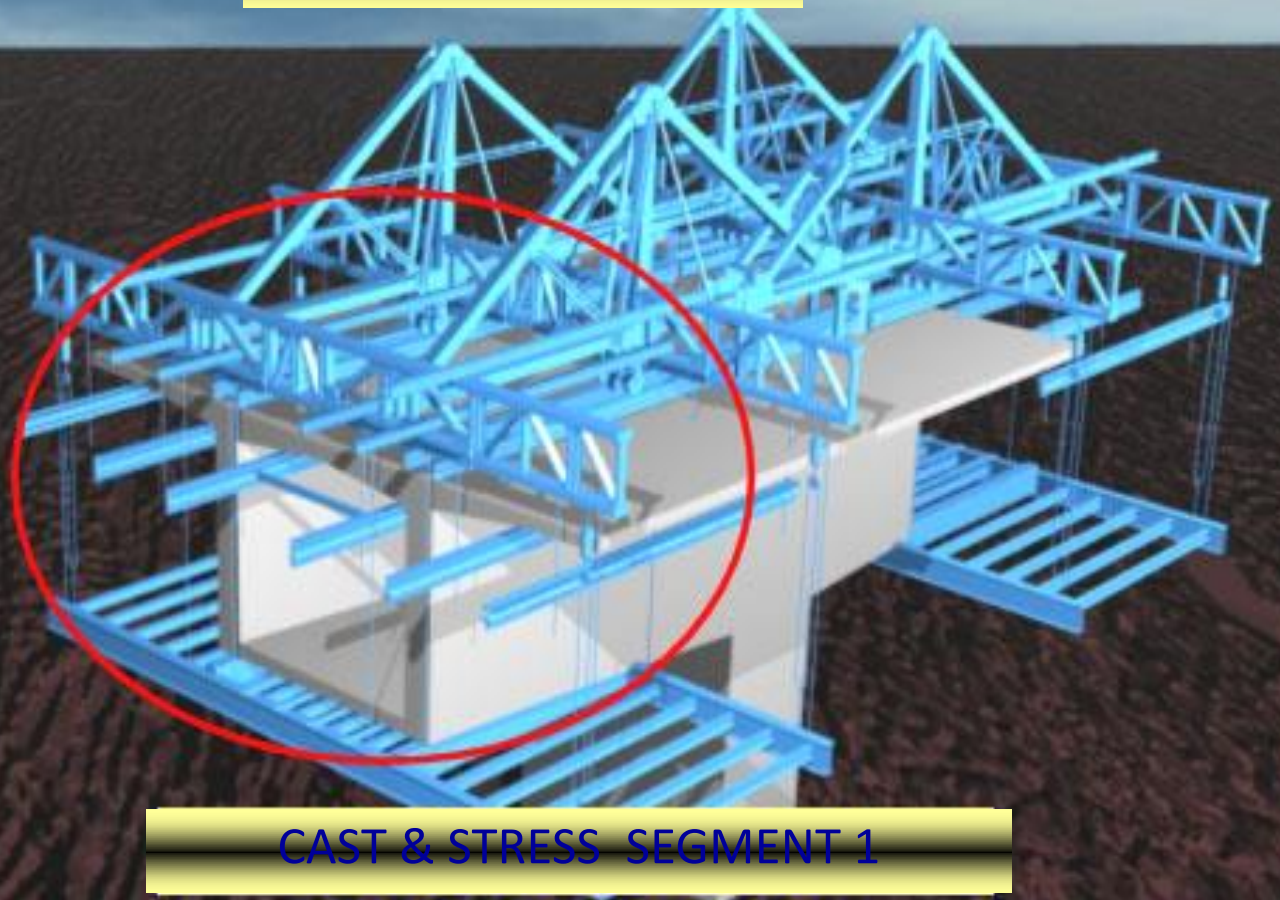


INSTALL RAIL BEAMS 1&2

STAGE 2

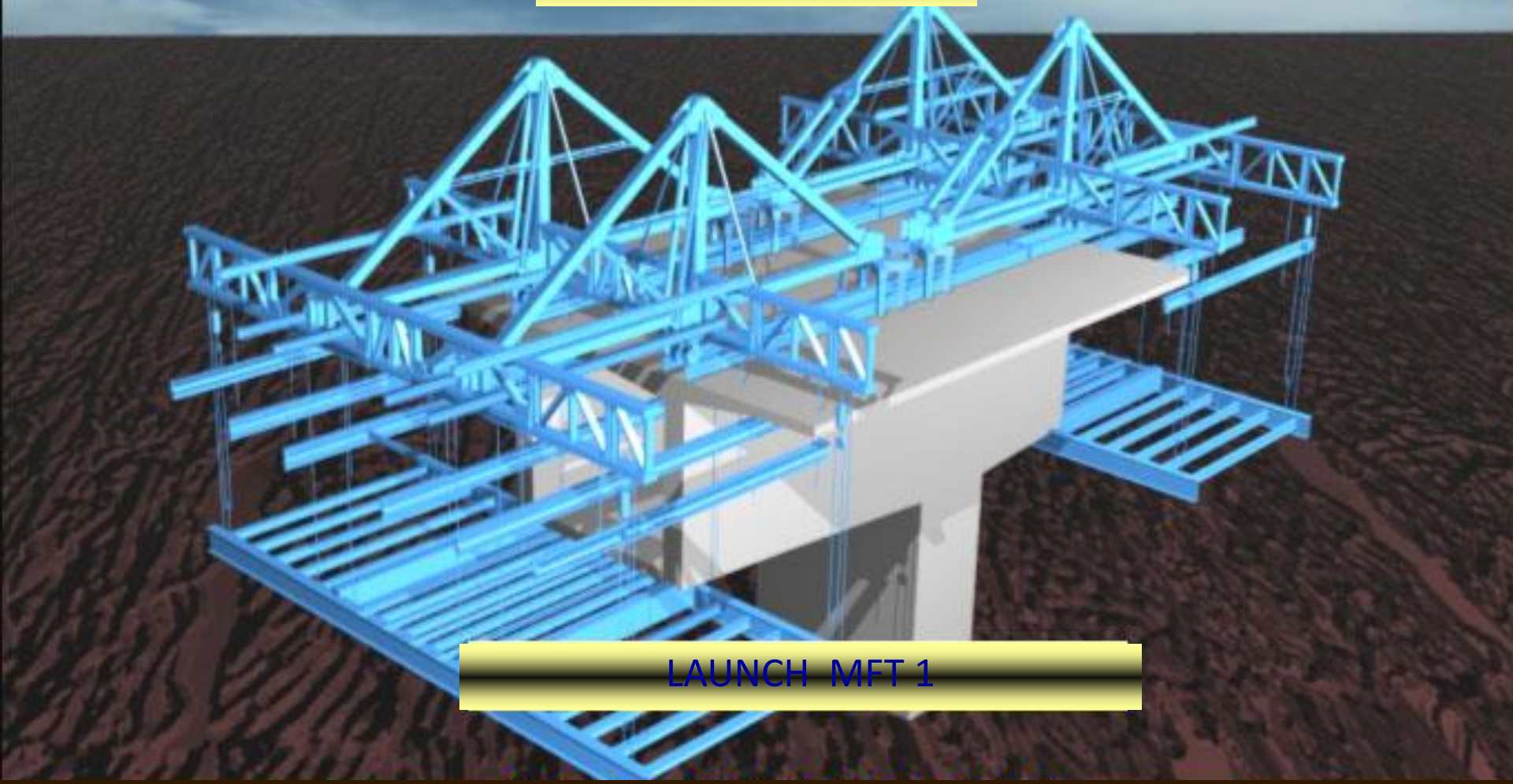


STAGE 3



CAST & STRESS SEGMENT 1

STAGE 4

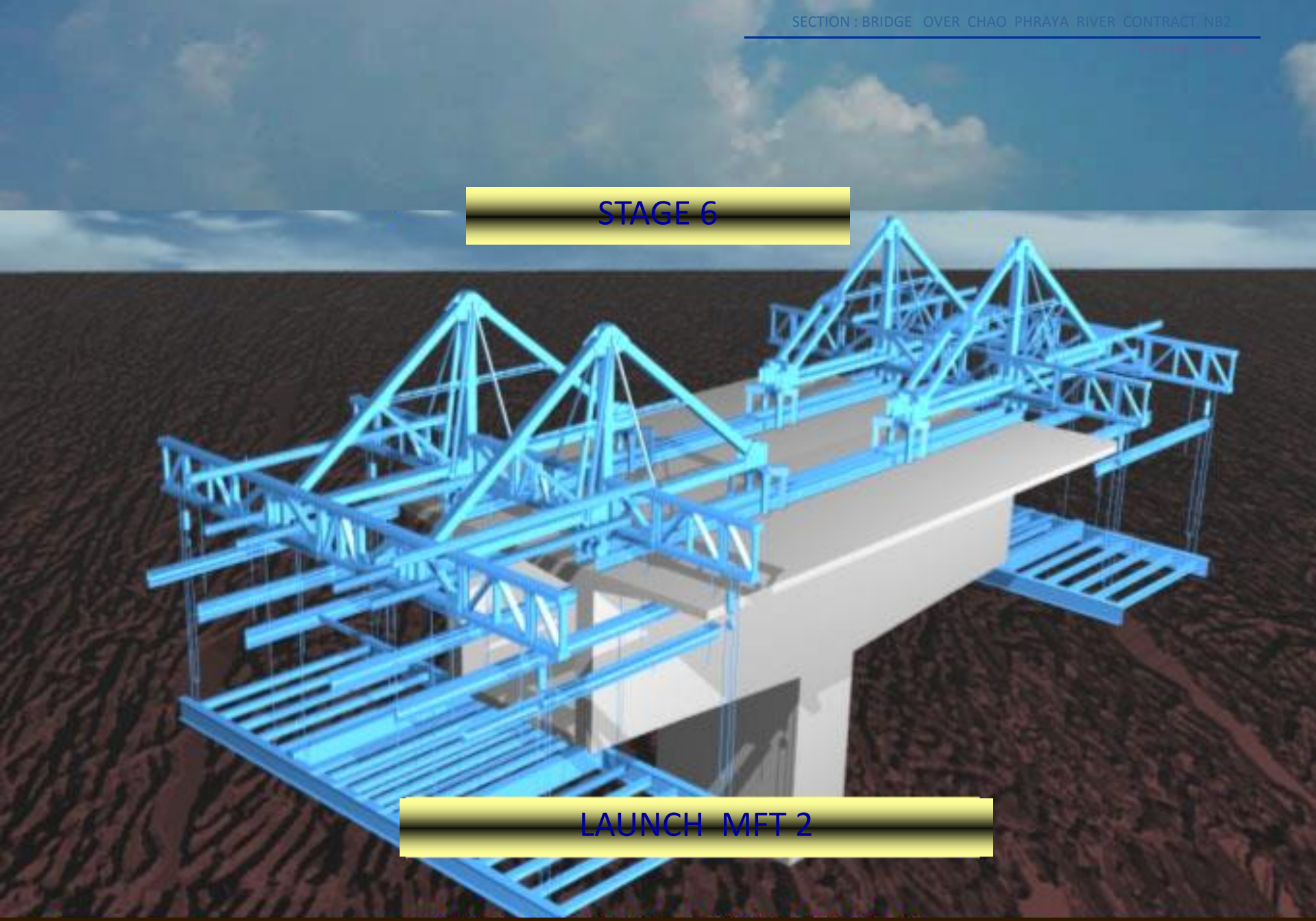


LAUNCH MFT 1

STAGE 5

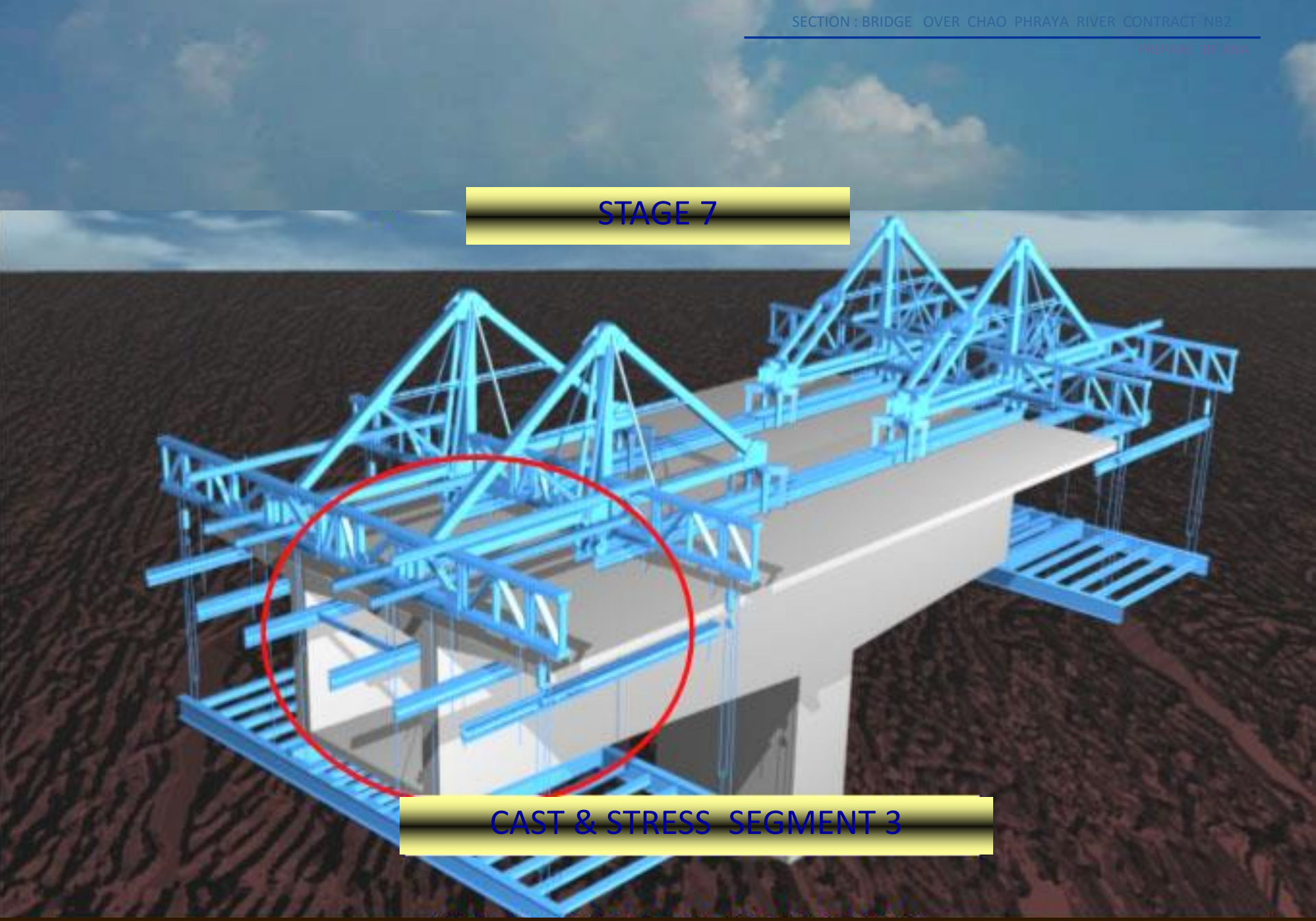
CAST & STRESS SEGMENT 2

STAGE 6



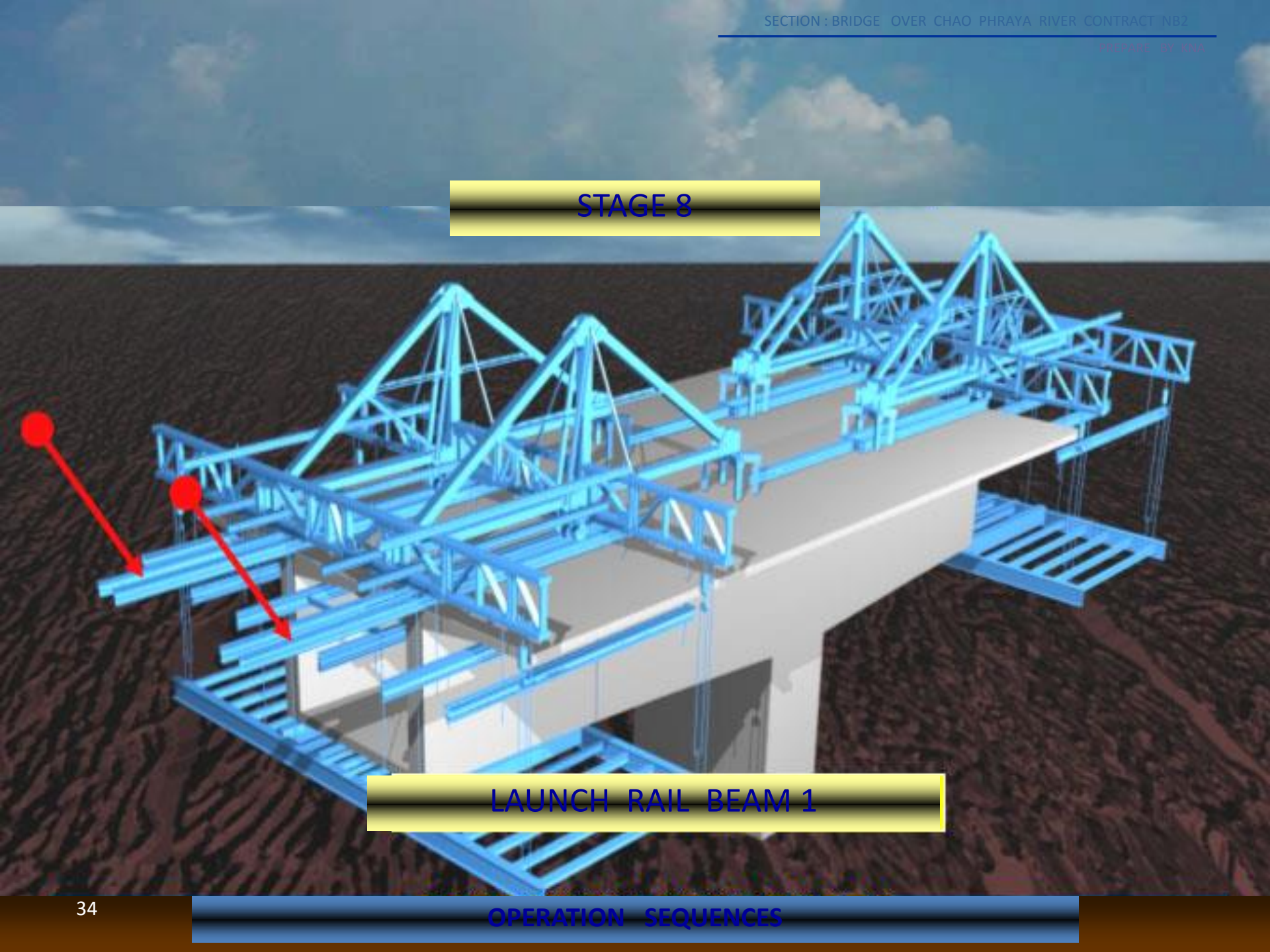
LAUNCH MFT 2

STAGE 7



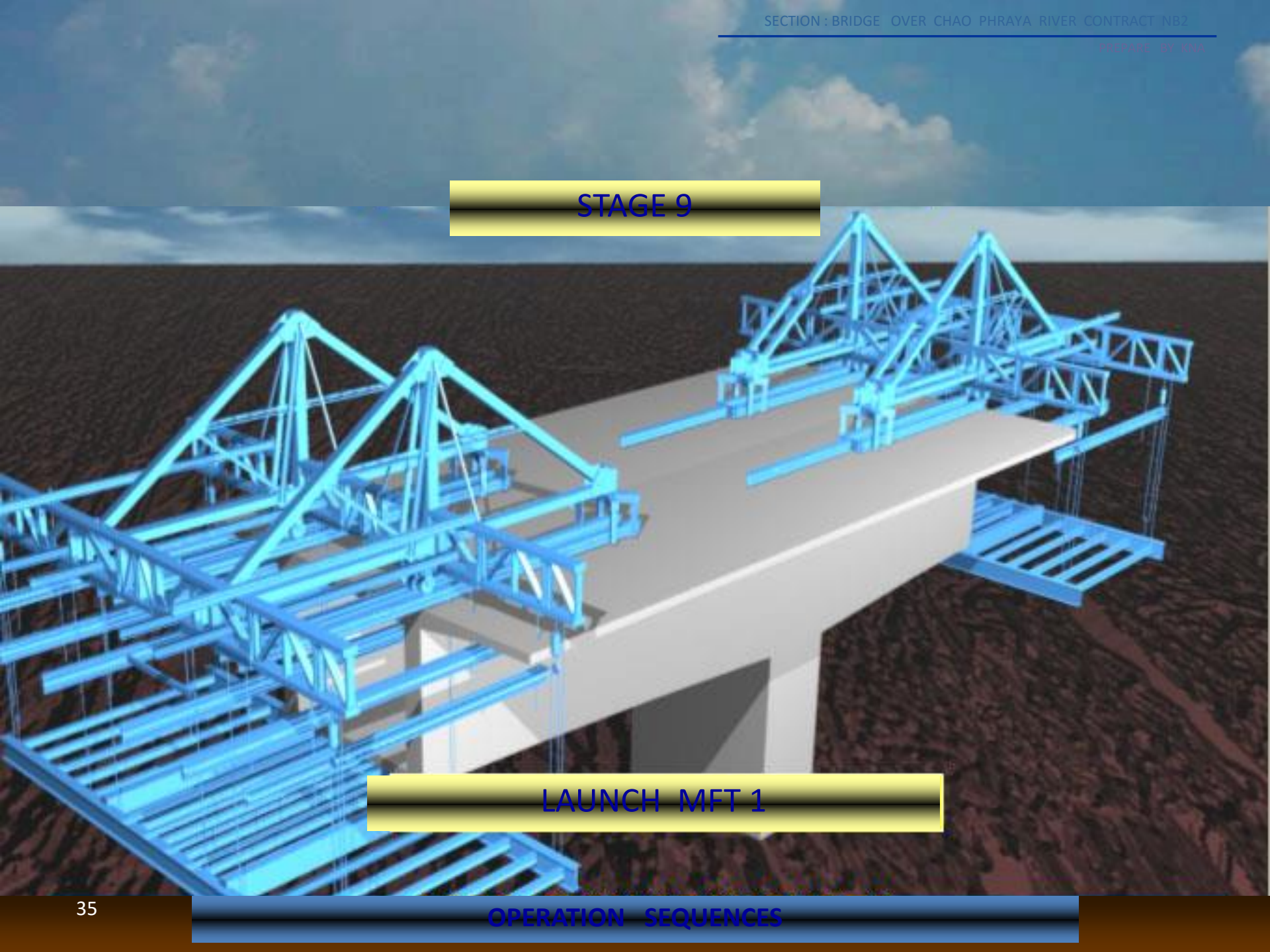
CAST & STRESS SEGMENT 3

STAGE 8



LAUNCH RAIL BEAM 1

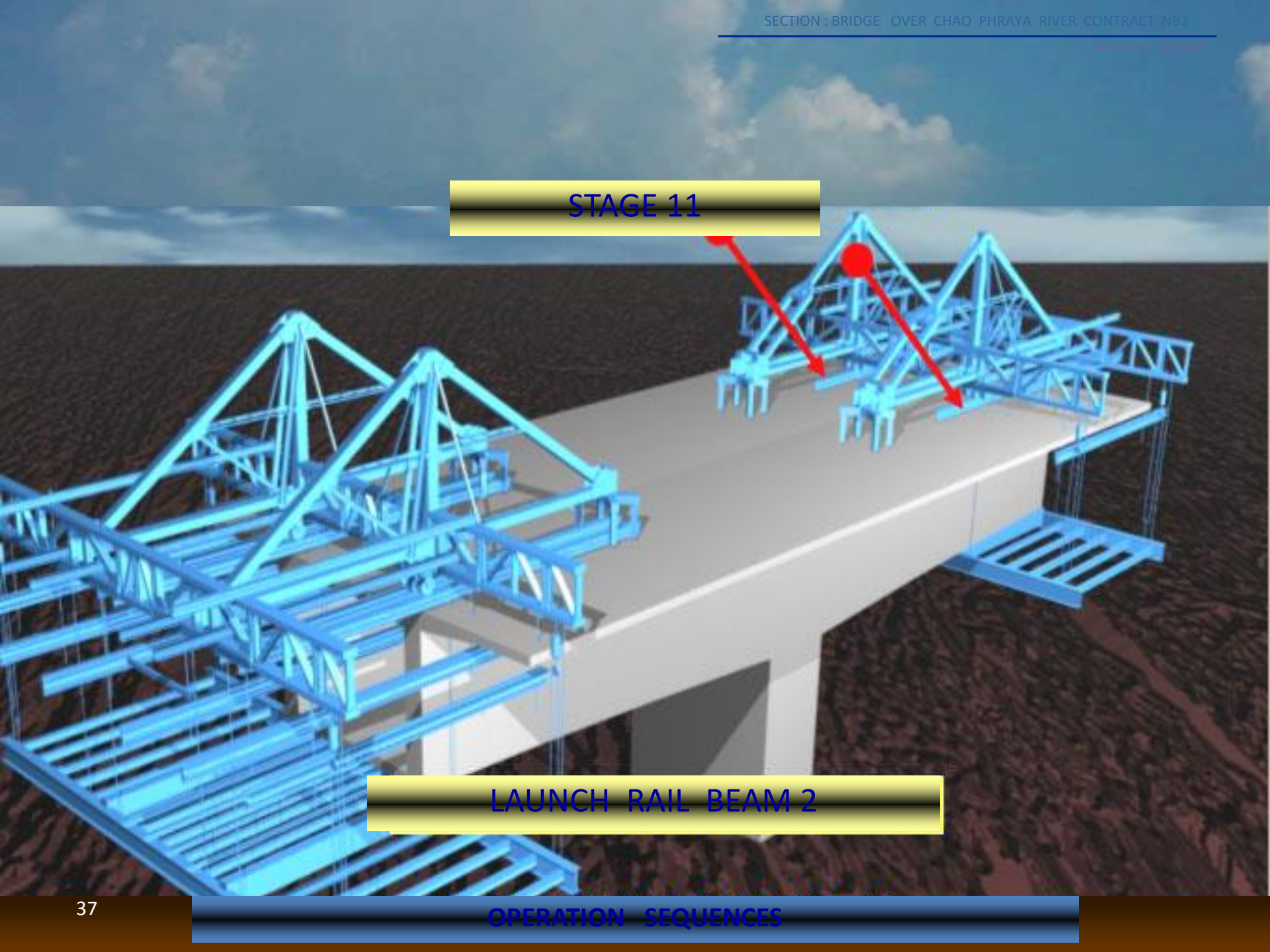
STAGE 9



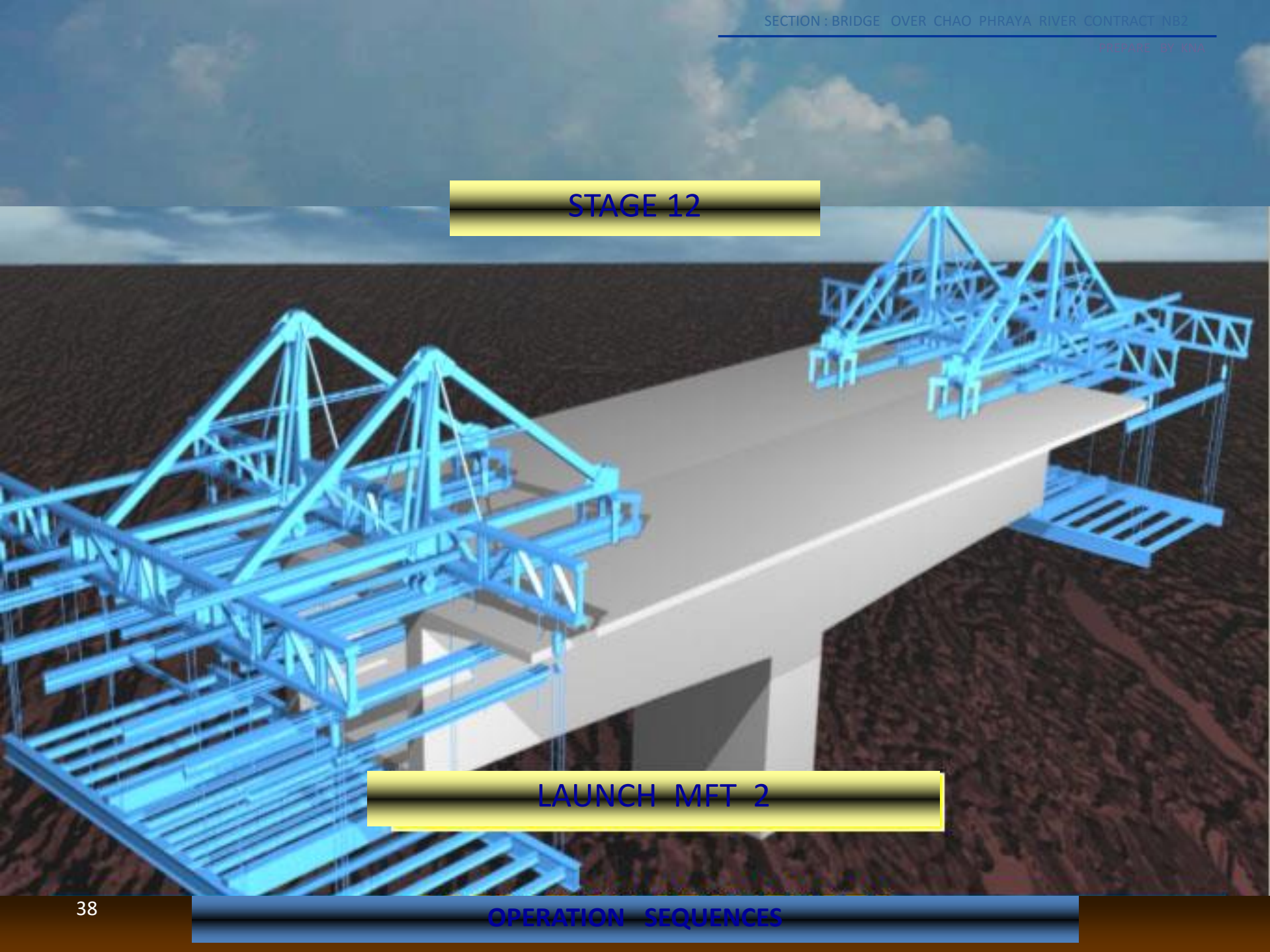
LAUNCH MFT 1

STAGE 10

CAST & STRESS SEGMENT 4

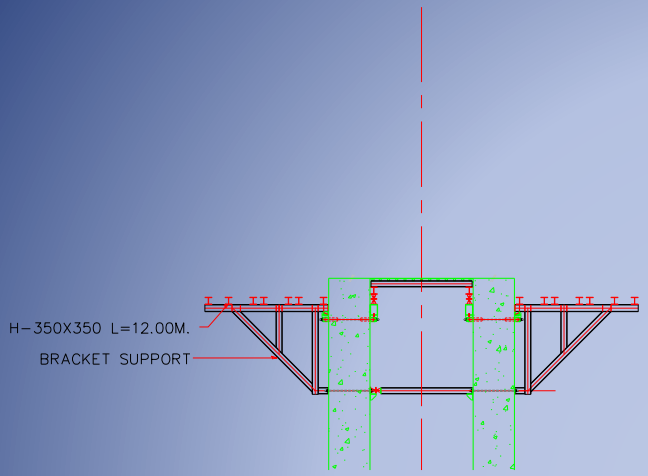

STAGE 11
LAUNCH RAIL BEAM 2

STAGE 12

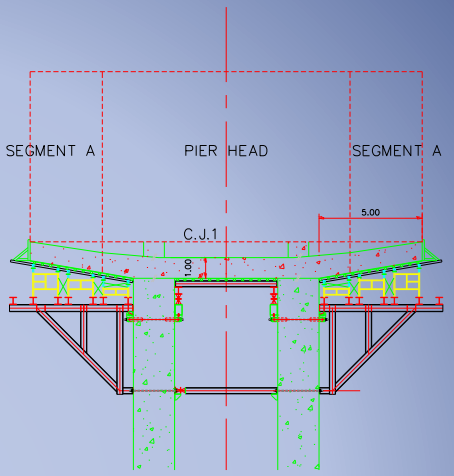


LAUNCH MFT 2

PIER HEAD CONSTRUCTION

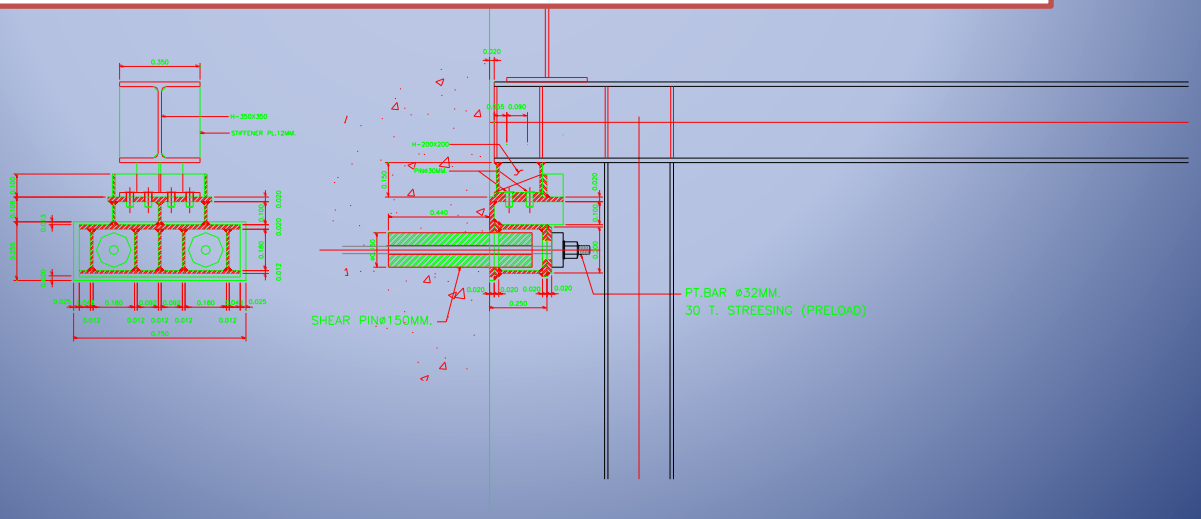


STAGE 1
-INSTALL BRACKET SUPPORT AND SCAFFOLDING
-INSTALL FORMWORK

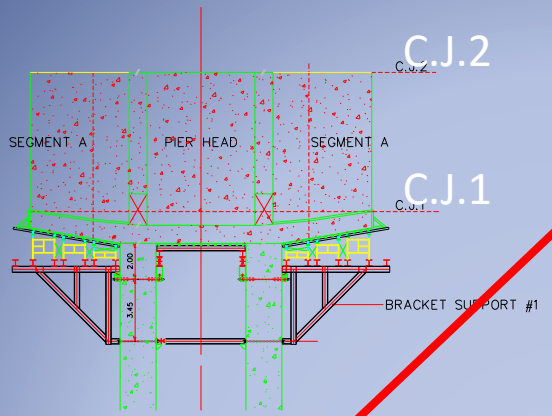


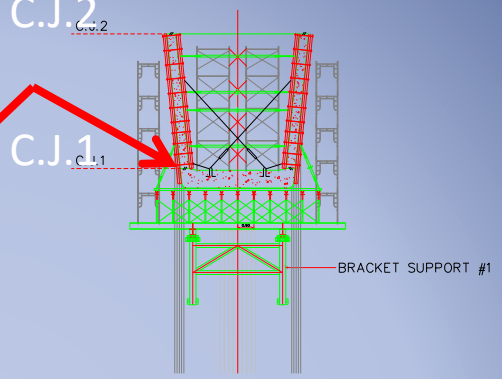
STAGE 2
-FIXING REBAR
-CAST BOTTOM SLAB

ติดตั้ง Bracket support และนั่งร้านสำหรับเท Bottom Slab

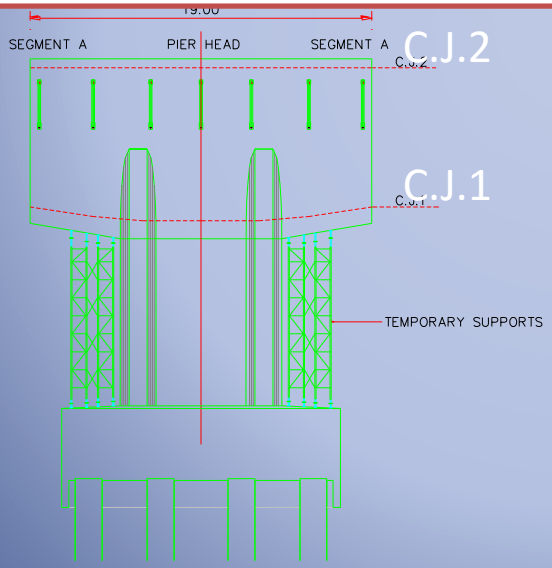


PIER HEAD CONSTRUCTION

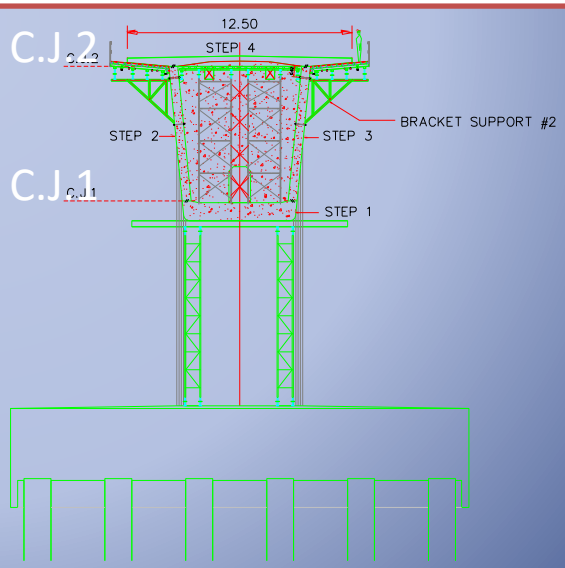




ก่อนเทคอนกรีต ชั้นต่อไป ให้ทำการสกัดผิวคอนกรีตเดิม ให้เห็นเนื้อหิน



STAGE 5
–INSTALL TEMPORARY SUPPORTS
–REMOVE BRACKET SUPPORT #1



STAGE 6
–INSTALL BRACKET SUPPORT 2#, WING AND TOP SLAB FORMWORK
–FIXING REBAR
–CAST WING AND TOP SLAB

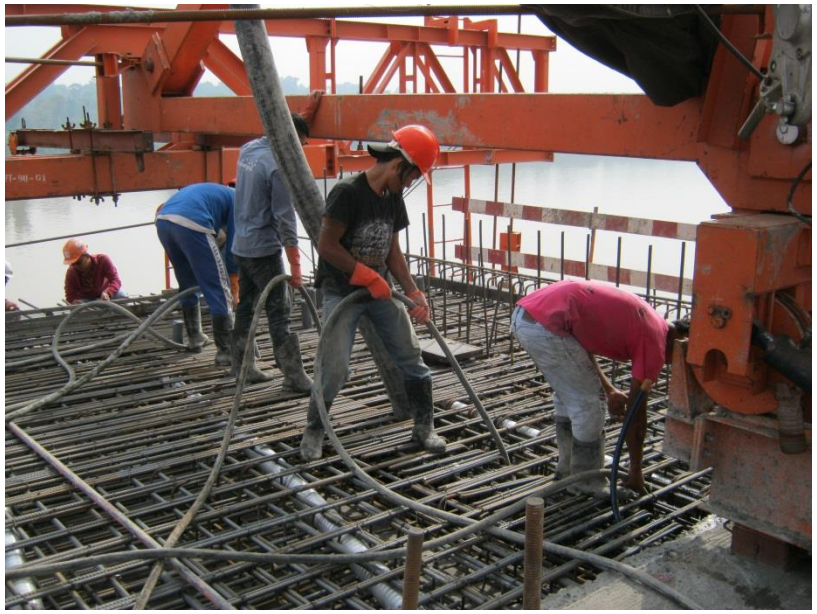
Pier Head

Form Traveler

Form Traveler

Reinforcement and Round Duct

concrete

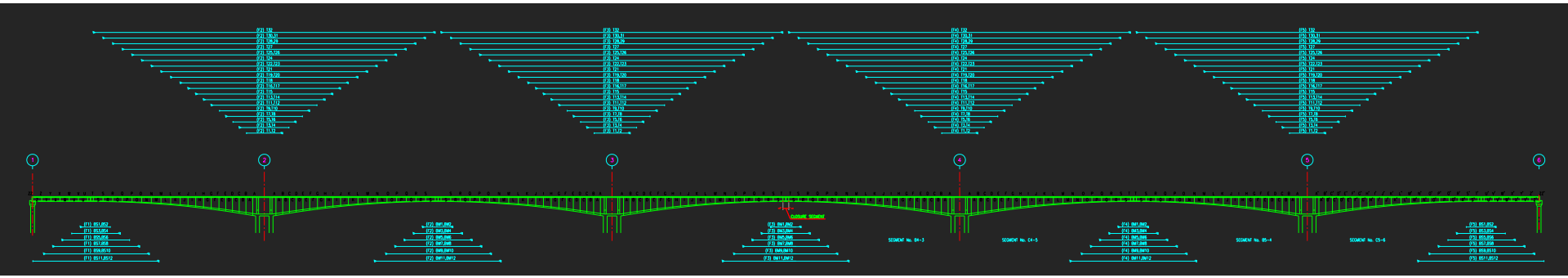


Concreting

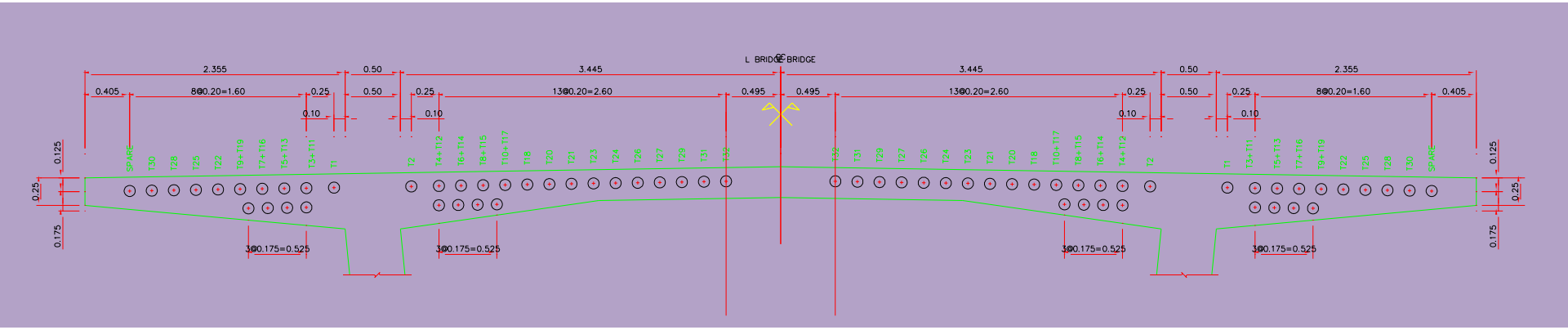
Installing Post-tensioning Strands

Stressing

3,470 KN Per Tendon (70% of Breaking Load)

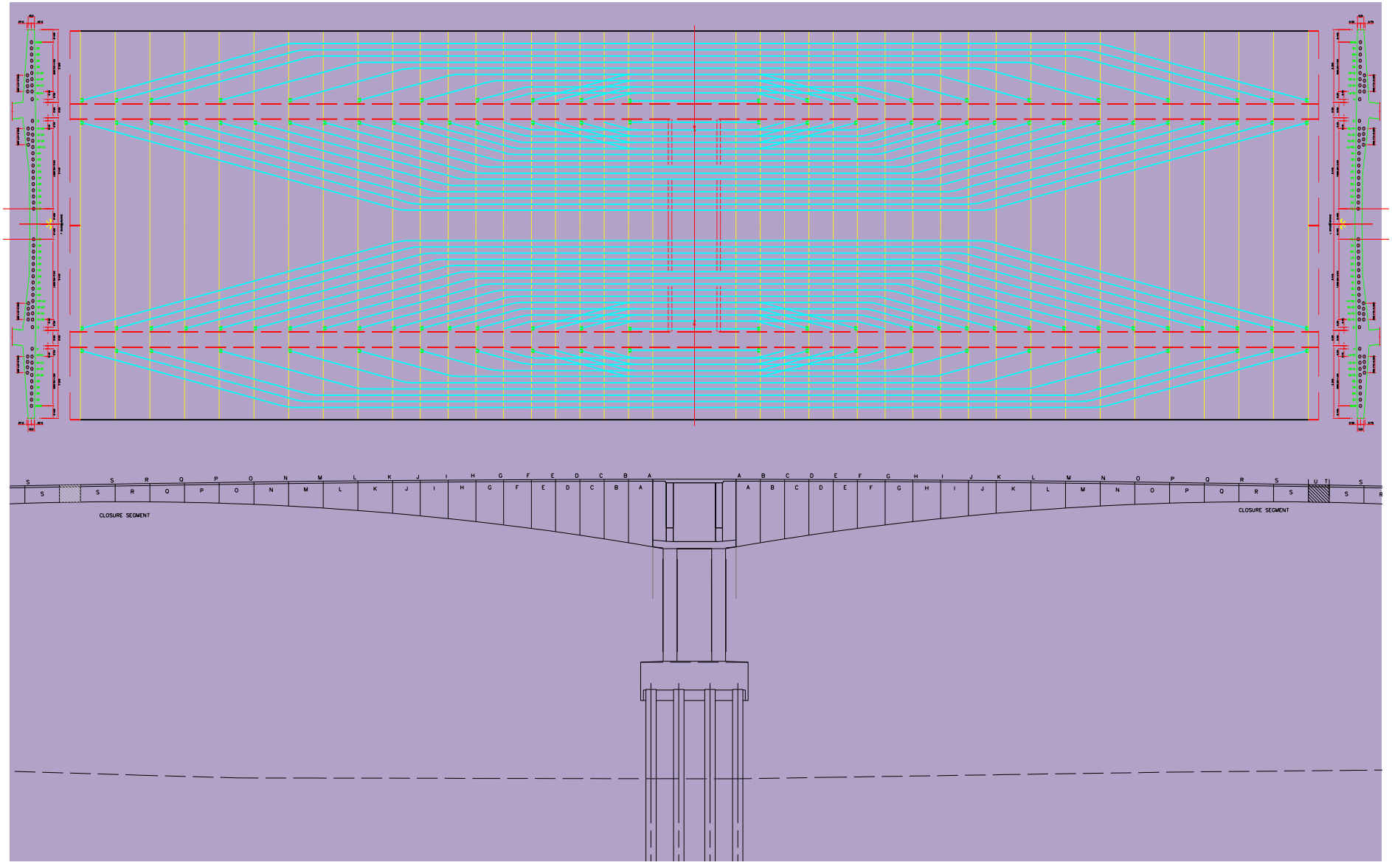


Top Slab Box Girder

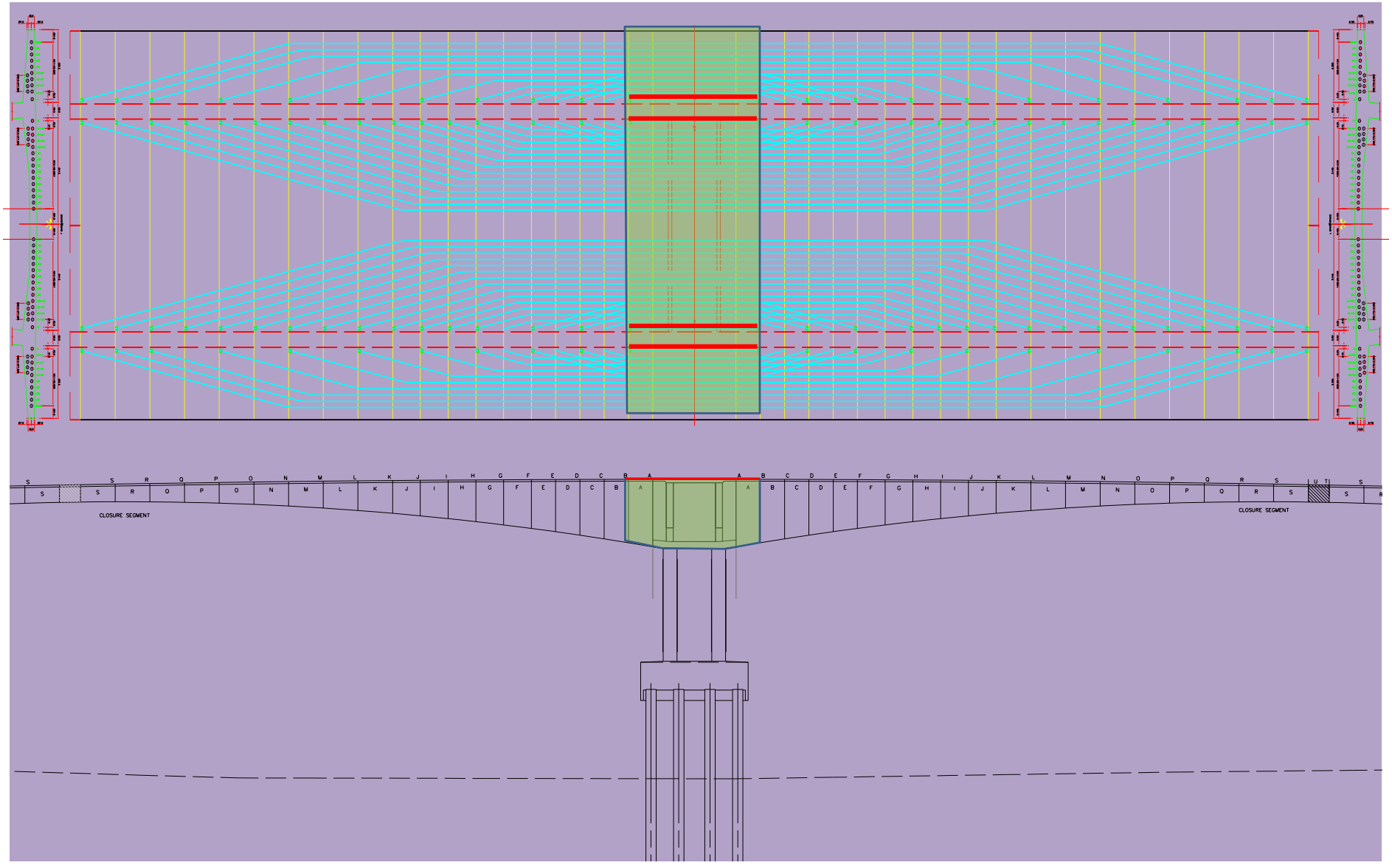


Cross Section

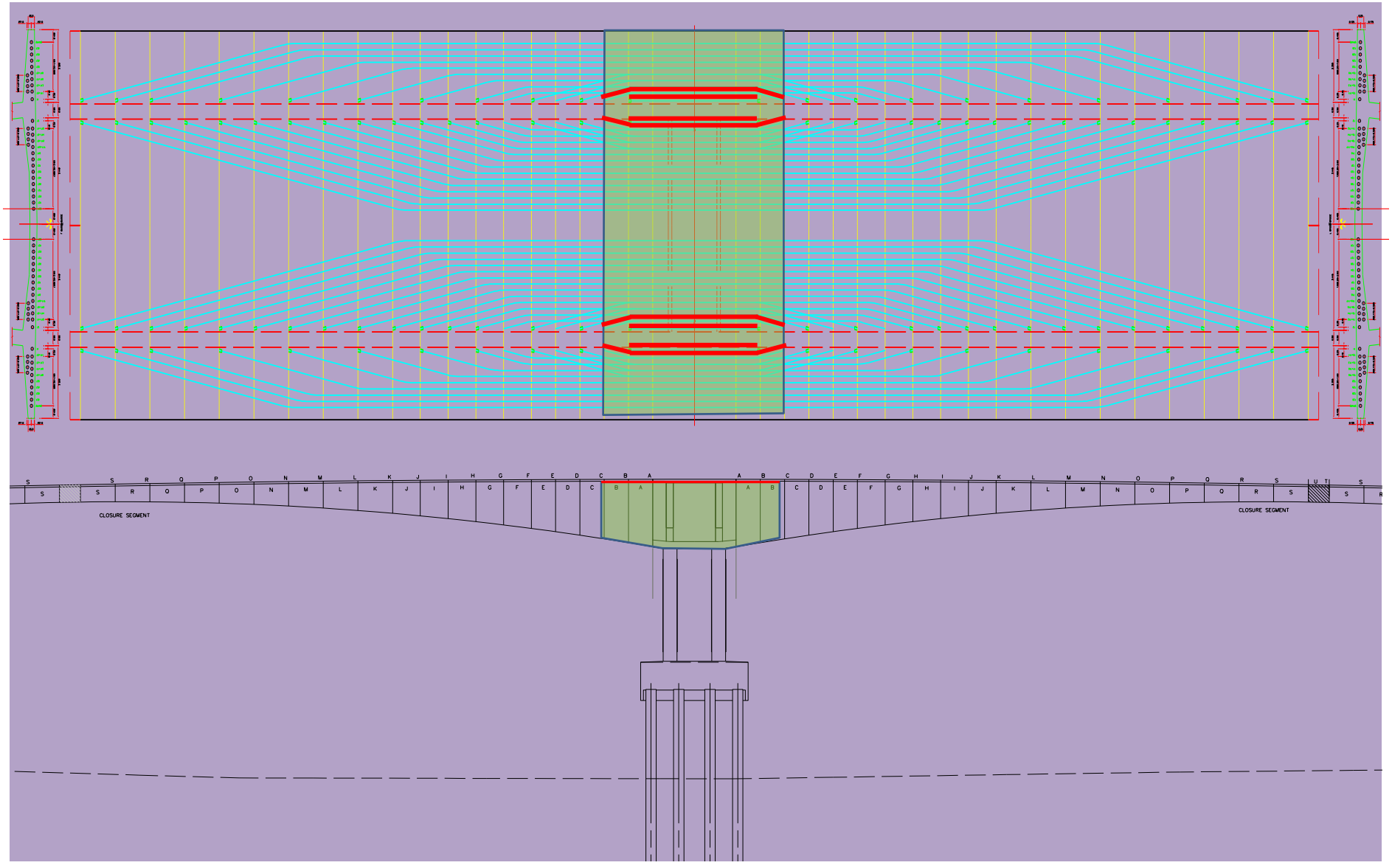
Top Slab Stressing Tendon Profile



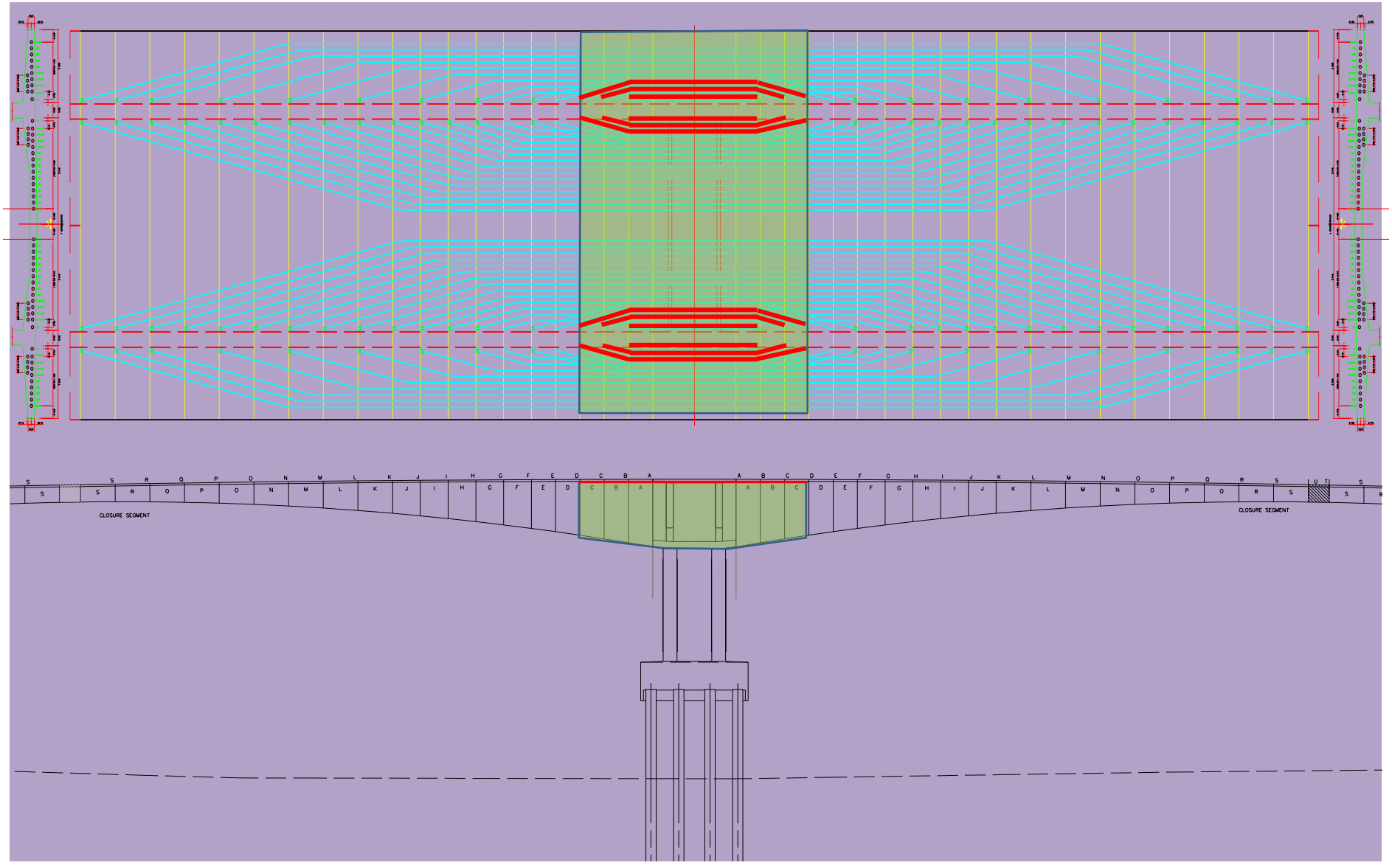
Top Slab Stressing Tendon Profile



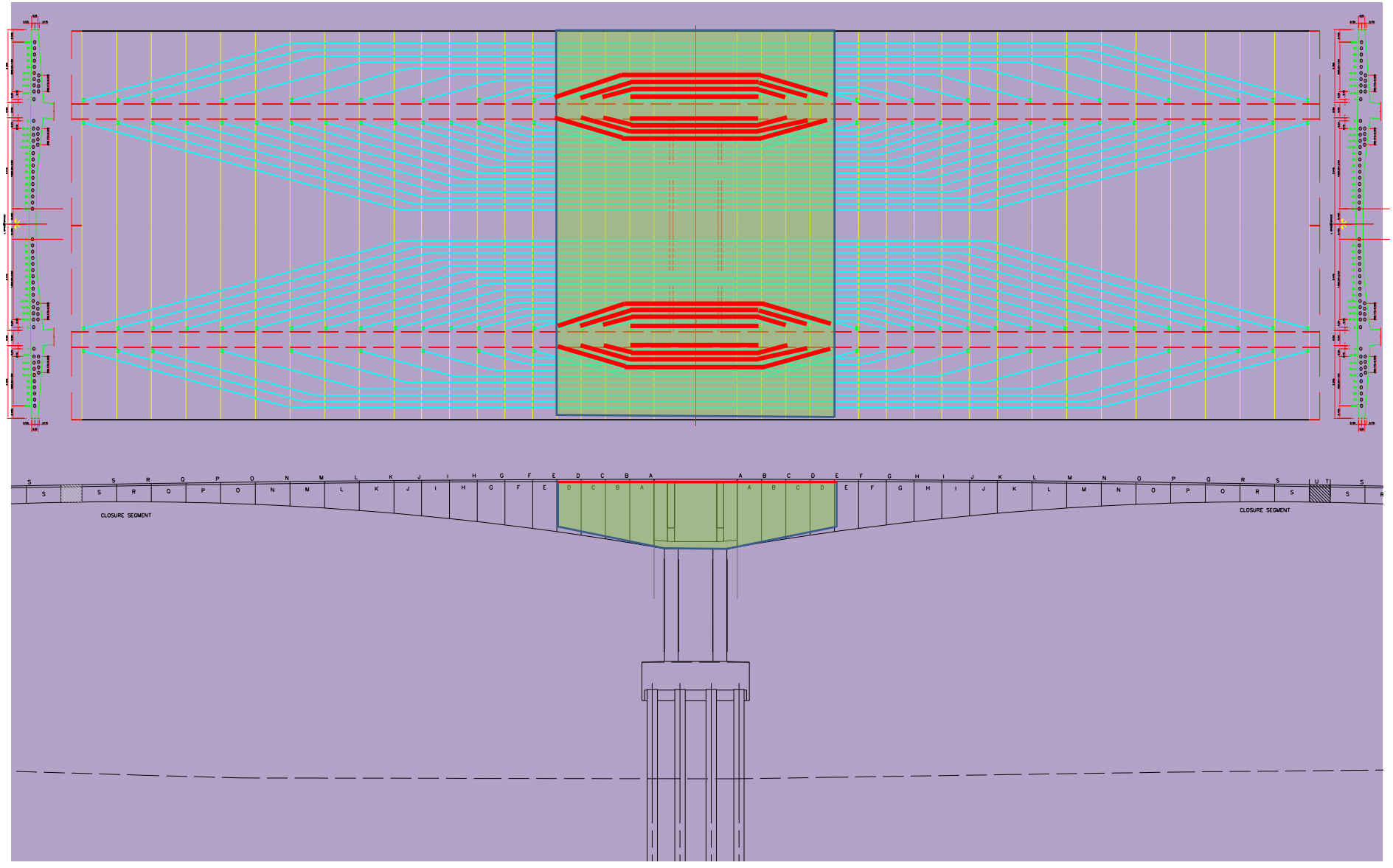
Top Slab Stressing Tendon Profile



Top Slab Stressing Tendon Profile

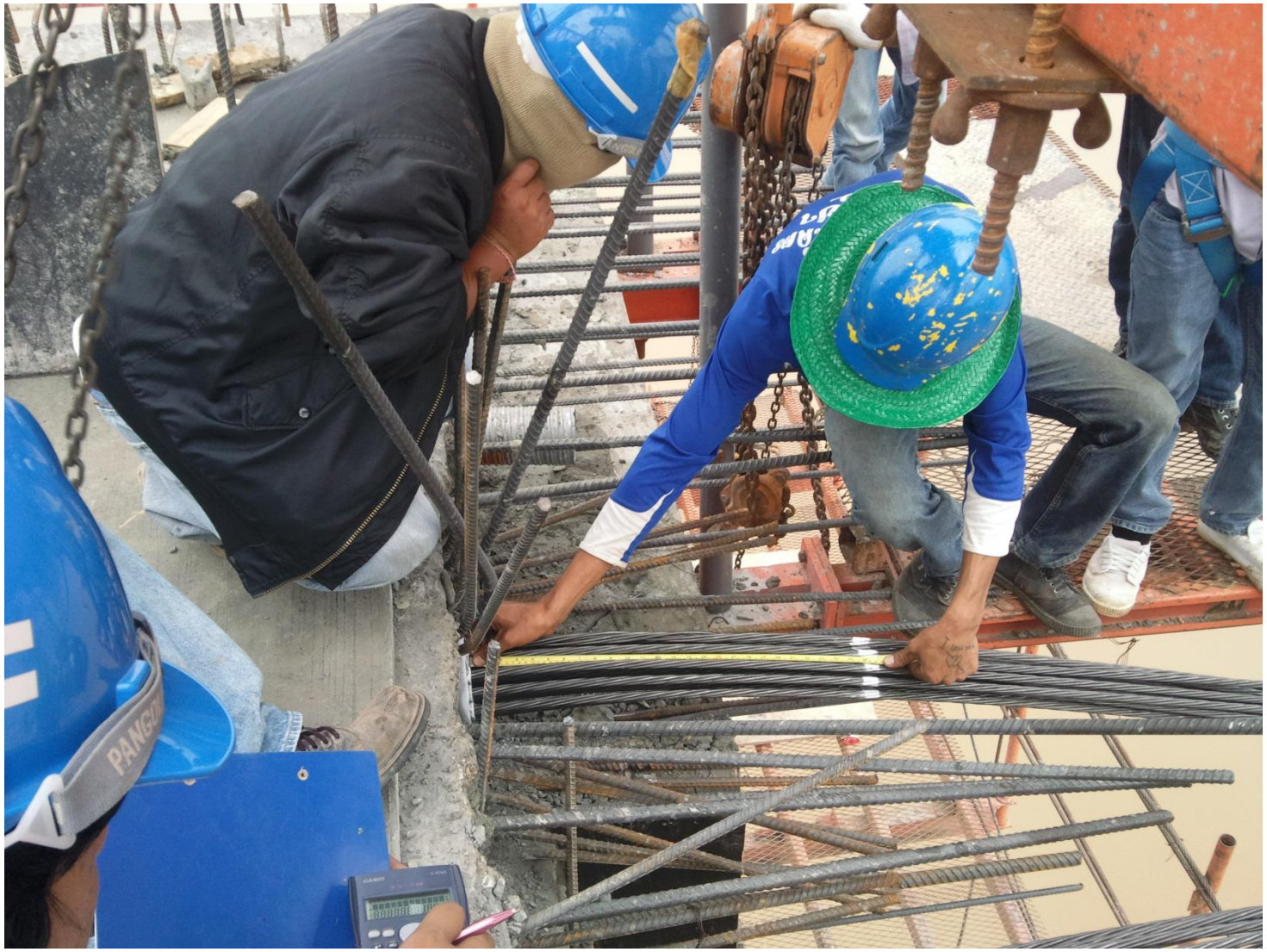


Top Slab Stressing Tendon Profile



Measure Strands Elongation

Measure Strands Elongation



Cutting

Grouting

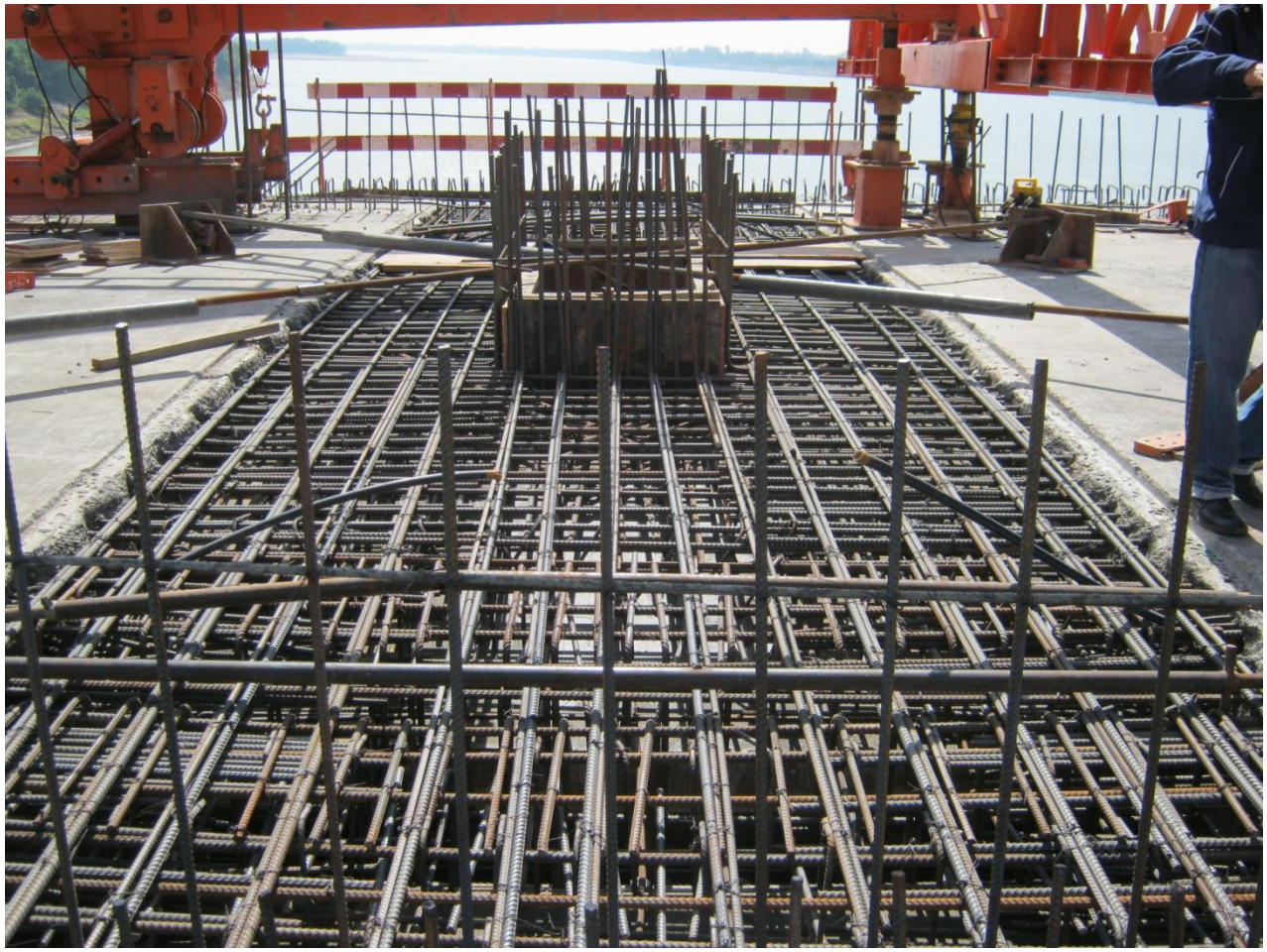
w/c –ratio	<0.42
Flowability	11-18sec
Temperature	<25c

Grouting

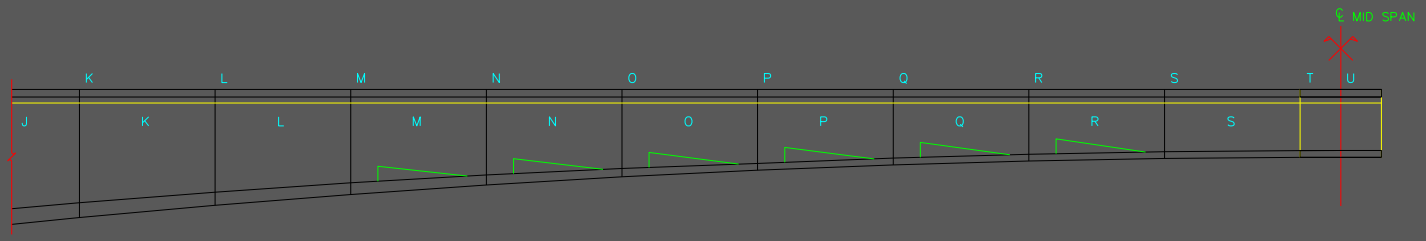
Injected into the ducts to completely fill all remaining voids and to seal the permanently stressed tendons.

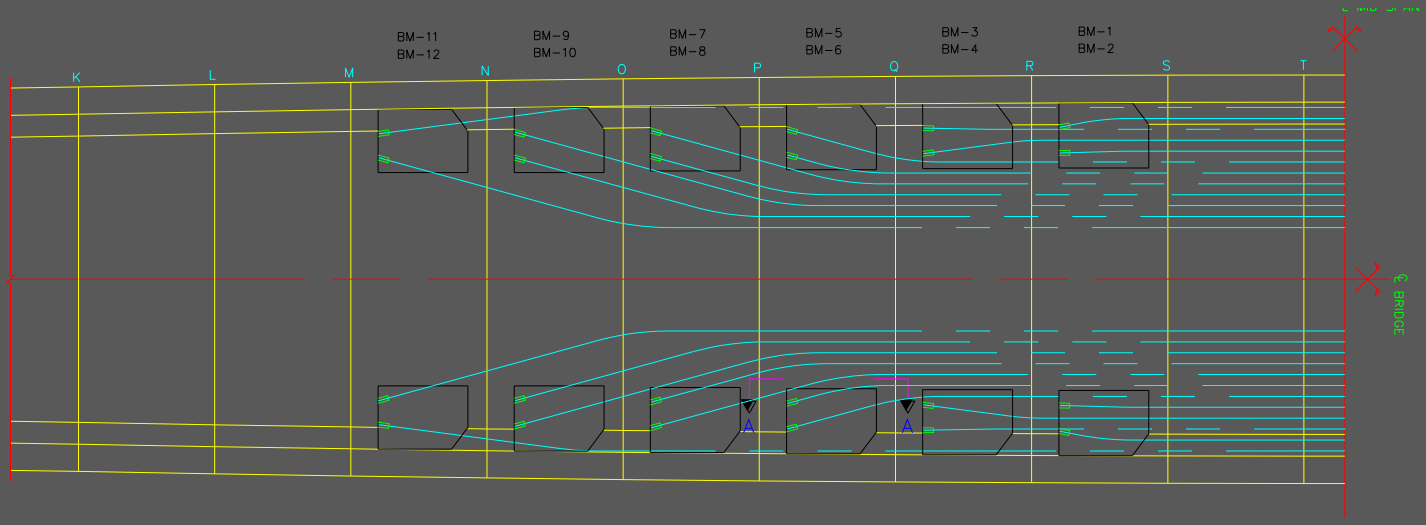
Closure Segment

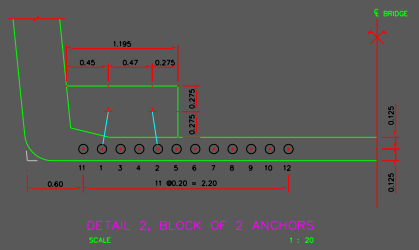
Closure Segment

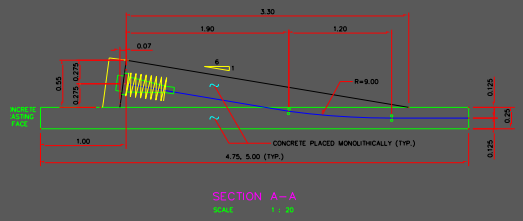


Main Span Continuity Tendon









24 Tendons

Stressing Continuity Tendon

Monthly Progress
of
Main Bridge

October 2009


November 2009


December 2009


January 2010

February 2010


March 2010


April 2010

May 2010


June 2010

July 2010

August 2010

September 2010


October 2010


November 2010


December 2010


January 2011


June 2010
July 2010
August 2010
September 2010
October 2010
November 2010
December 2010


96.24%

Thank you