

INNOVATION IN PRECAST CONCRETE BRIDGES

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KUALA LUMPUR PUTRA JAYA HIGHWAY: PACKAGE 5 (RAMP 4)

IAHE WORLD BANK

20 FEB 15



**PRECAST
SEGMENTAL
CONSTRUCTION**

APPROACH STRUCTURE OF SIGNATURE BRIDGES AT WAZIRABAD, NEW DELHI



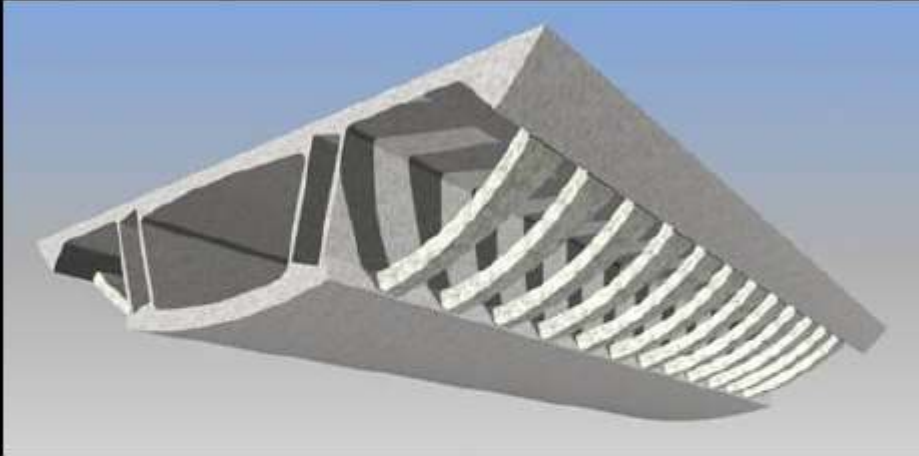
WESTERN
APPROACH

SIGNATURE
BRIDGE

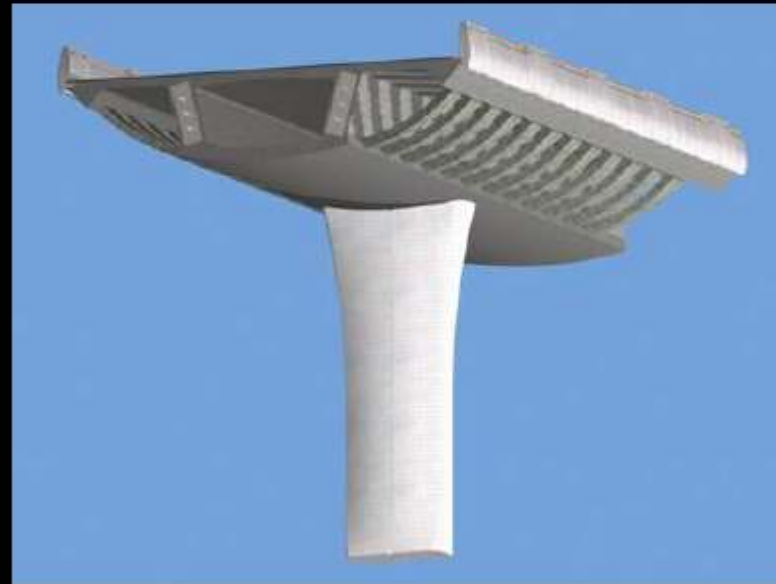
EASTERN
APPROACH



Precast Segmental Via-ducts with **Ribs** (**First Time in India**)



First Time in India :
Precast Segmental
Superstructure
INTEGRAL TO PIER







BARAPULLA ELEVATED ROAD

TRADITIONAL BOX GIRDER SEGMENTS OF FULL ROADWAY WIDTH



BARAPULLA ELEVATED CORRIDOR LAYOUT AND COMPLETED STRUCTURE









ELEVATED ROAD ABOVE BARAPULLA STREAM $2 \times 4.5 = 9\text{km}$



CASTING-STACKING YARD



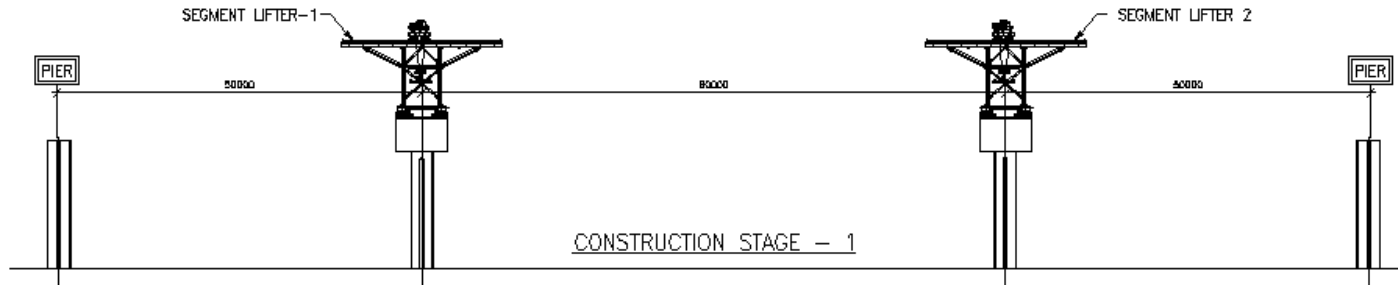
TRANSPORTATION OF BIG SEGMENTS OF MAJOR CROSSING



BARARULLA ELEVATED CORRIDOR

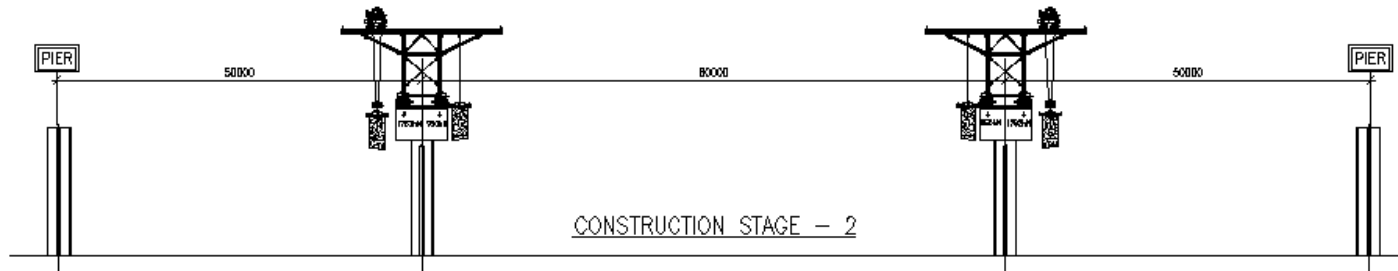
SEGMENT ERECTION TECHNIQUE

DAY	ACTIVITY-S.L 1
0	ASSEMBLY SEGMENT LIFTER ON PIER HEAD SEGMENT



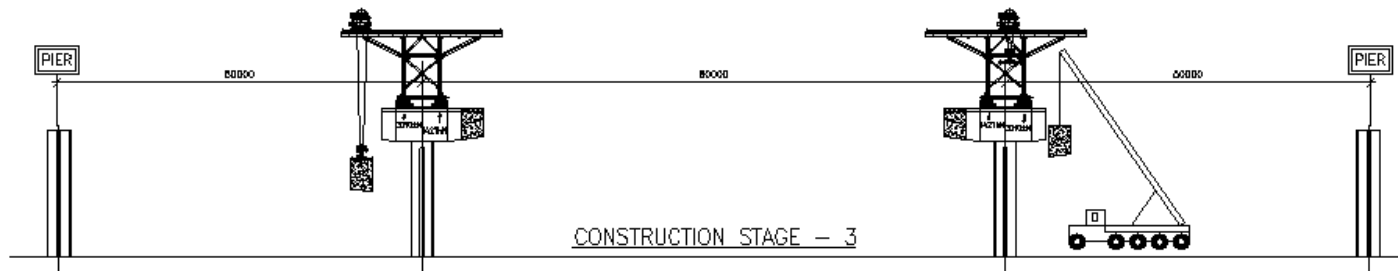
DAY	ACTIVITY-S.L 2
0	ASSEMBLY SEGMENT LIFTER ON PIER HEAD SEGMENT

DAY	ACTIVITY-S.L 1
5	LIFT SEGMENT FROM GROUND AND HOLD IN PLACE, THEN LIFT SEGMENT ON THE OTHER SIDE, ADJUST AND JOIN THE SEGMENTS TO THE PIER HEAD (WET JOINT).



DAY	ACTIVITY-S.L 2
5	LIFT SEGMENT FROM GROUND AND HOLD IN PLACE, THEN LIFT SEGMENT ON THE OTHER SIDE, ADJUST AND JOIN THE SEGMENTS TO THE PIER HEAD (WET JOINT).

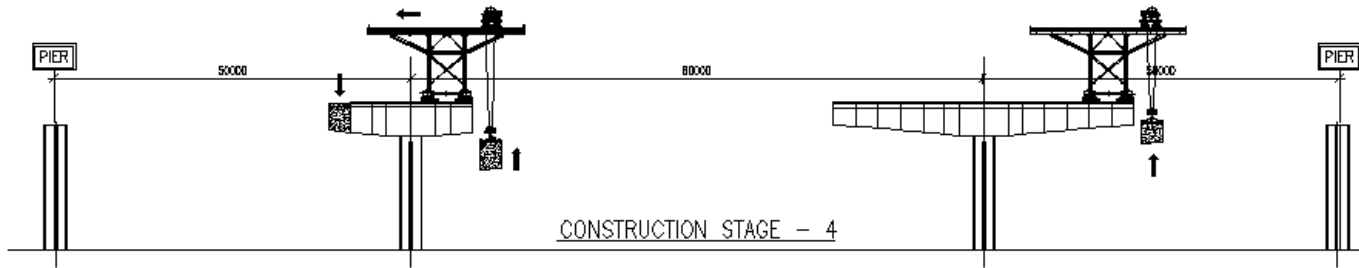
DAY	ACTIVITY-S.L 1
8	LIFT 2ND SEGMENT FROM GROUND ON BOTH SIDES BY SEGMENT LIFTER, PRESTRESS THE TEMPORARY POST TENSIONING CABLES.



DAY	ACTIVITY-S.L 2
8	ERECT 2ND AND 3RD SEGMENTS WITH CRANE AS SHOWN.

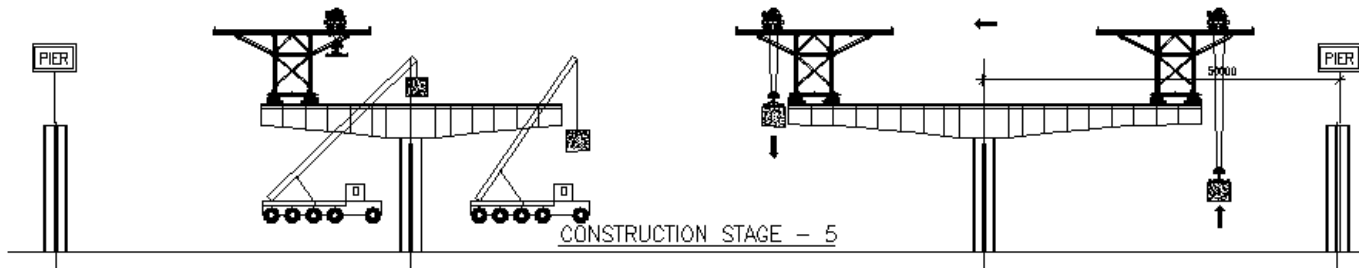
SPECIAL CROSSINGS: SEGMENT ERECTION

DAY	ACTIVITY-S.L 1
10	TRAVEL SEGMENT LIFTER ON BRIDGE DECK, PICK THE 3RD TO 6TH SEGMENTS FROM RIGHT SIDE AND ERECT ITS ON LEFT SIDE AS SHOWN.



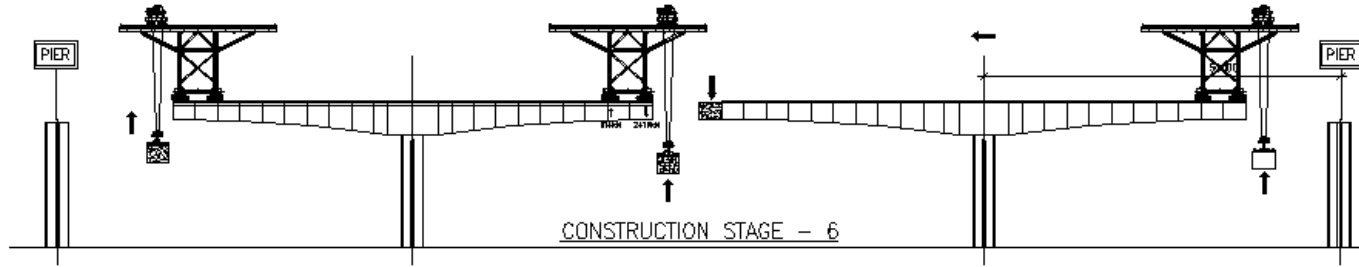
DAY	ACTIVITY-S.L 2
12	LIFT 4TH TO 7TH SEGMENTS FROM GROUND ON BOTH SIDES BY SEGMENT LIFTER. PRESTRESS THE TEMPORARY POST TENSIONING CABLES.

DAY	ACTIVITY-S.L 1
18	ERECT 7TH SEGMENT WITH CRANE AS SHOWN. ALTERNATIVELY THE SEGMENT LIFTER CAN PICK THE SEGMENT FROM THE PIER HEAD.



DAY	ACTIVITY-S.L 2
20	TRAVEL SEGMENT LIFTER ON BRIDGE DECK, PICK THE 8TH TO 9TH SEGMENTS FROM RIGHT AND ERECT IT ON LEFT SIDE OF PIER AS SHOWN.

DAY	ACTIVITY-S.L 1
20	LIFT 8TH TO 11ST SEGMENTS FROM GROUND ON BOTH SIDES BY SEGMENT LIFTER. PRESTRESS THE TEMPORARY POST TENSIONING CABLES.



DAY	ACTIVITY-S.L 2
24	LIFT 11TH TO 12TH SEGMENTS FROM GROUND ON BOTH SIDES BY SEGMENT LIFTER. PRESTRESS THE TEMPORARY POST TENSIONING CABLES.

SPECIAL CROSSINGS: SEGMENT ERECTION



**THE RAILWAY CROSSING UNDER CONSTRUCTION
OPERATION MIDNIGHT: 2 hrs, alternate days**



LALA LAJPAT RAI CROSSING
NO DISTURBANCE TO TRAFFIC



LLR: SIMULTANEOUS PROGRESS OF BOTH CARRIAGEWAYS





BANGALORE ELECTRONIC CITY EXPRESSWAY

TRADITIONAL BOX GIRDER SEGMENTS OF FULL ROADWAY WIDTH



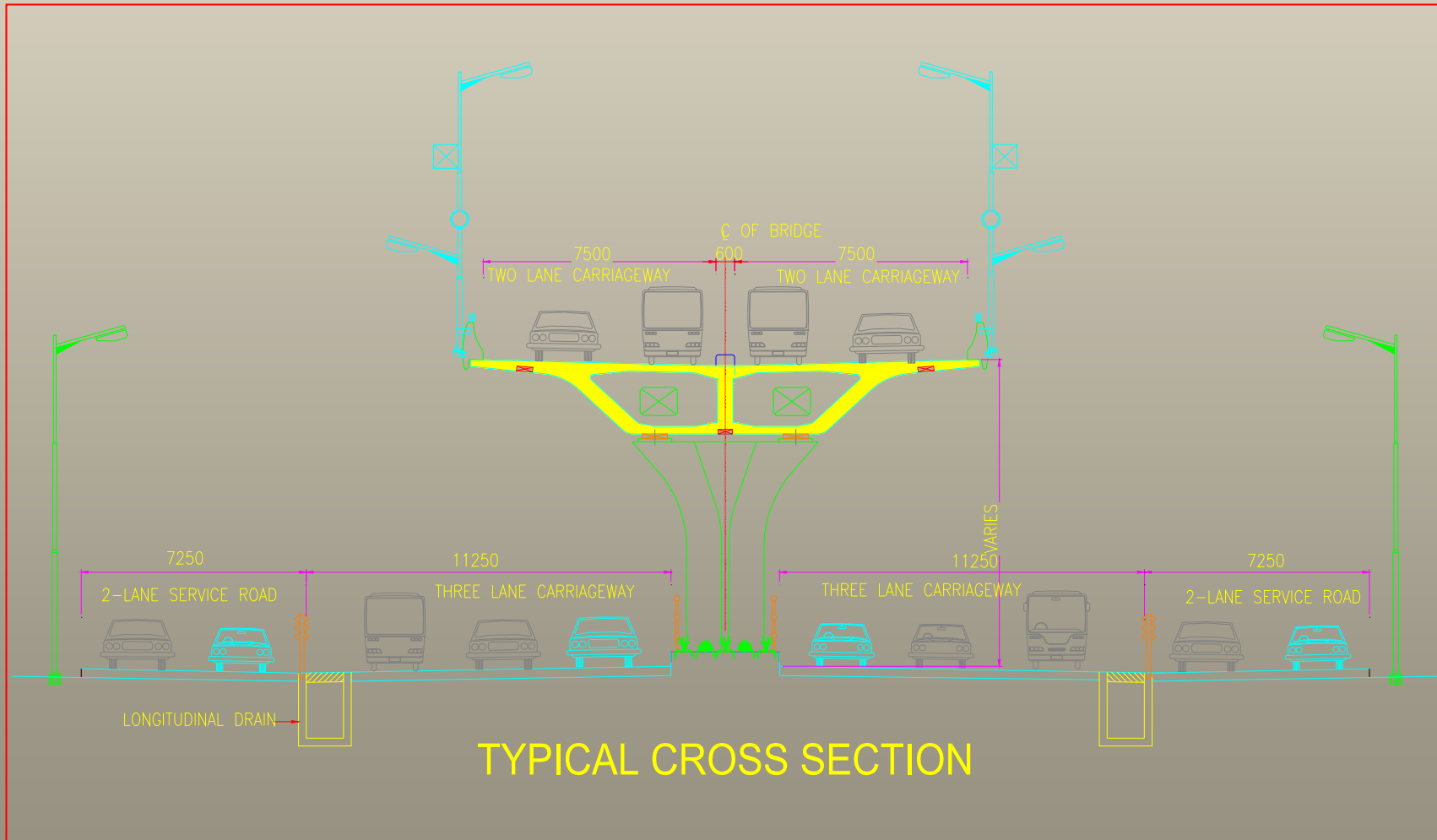


FIG I BANGALORE HO SUR EXPRESSWAY



PRECAST SEGMENT TRANSPORTED BY LOW BEDDED TRAILOR TO SITE



BANGALORE ELECTRONIC CITY X'WAY: SEGMENT ARRIVAL AT SITE



PRECAST SEGMENTS SUSPENDED FROM MAIN TRUSS DURING ERECTION



GENERAL VIEW OF PRECAST SEGMENTAL CONSTRUCTION WITH OVERHEAD LAUNCHING TRUSS

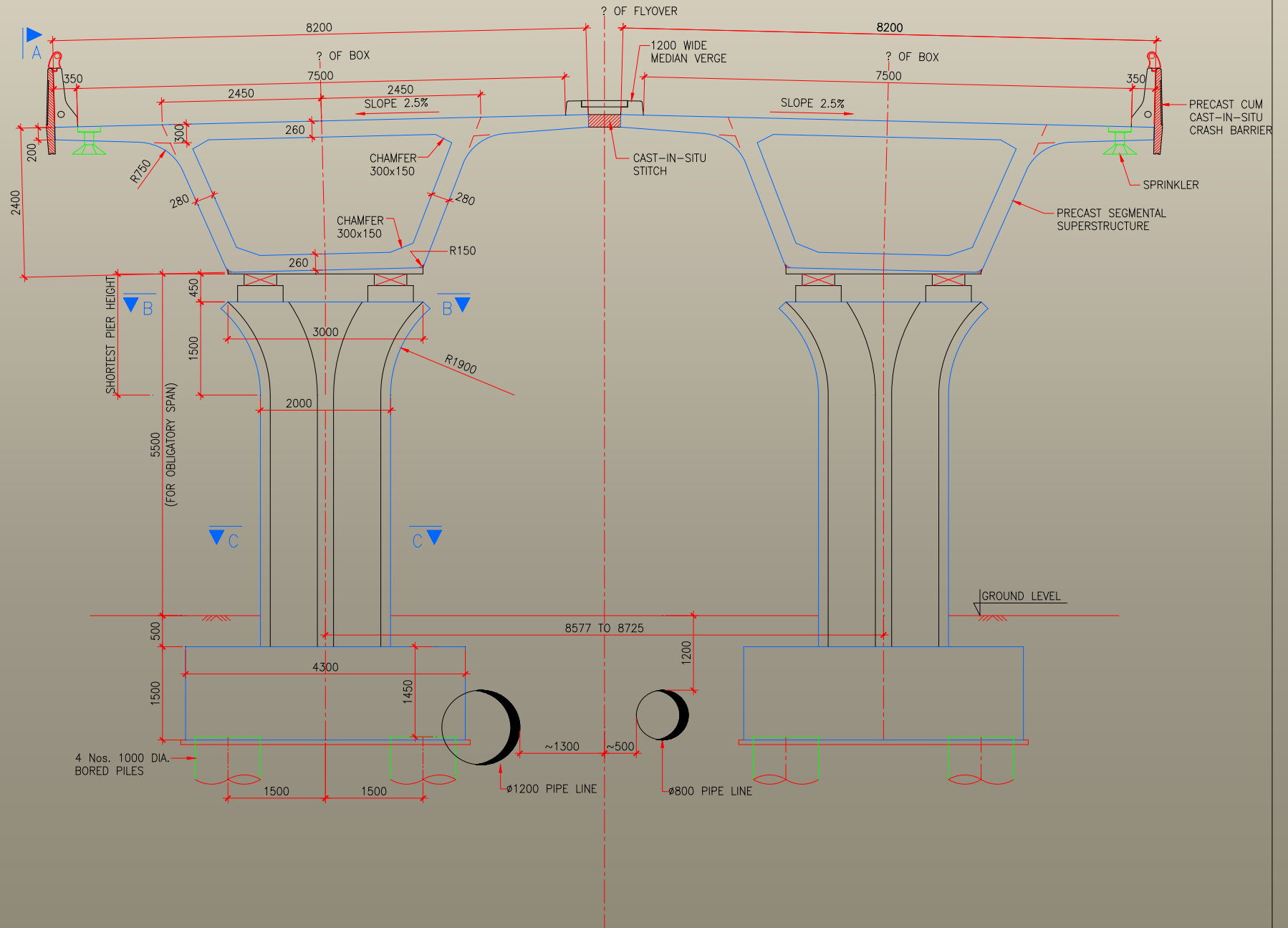
MUMBAI AMBEDKAR ROAD FLYOVERS

BOX GIRDER SEGMENTS OF HALF ROADWAY WIDTH





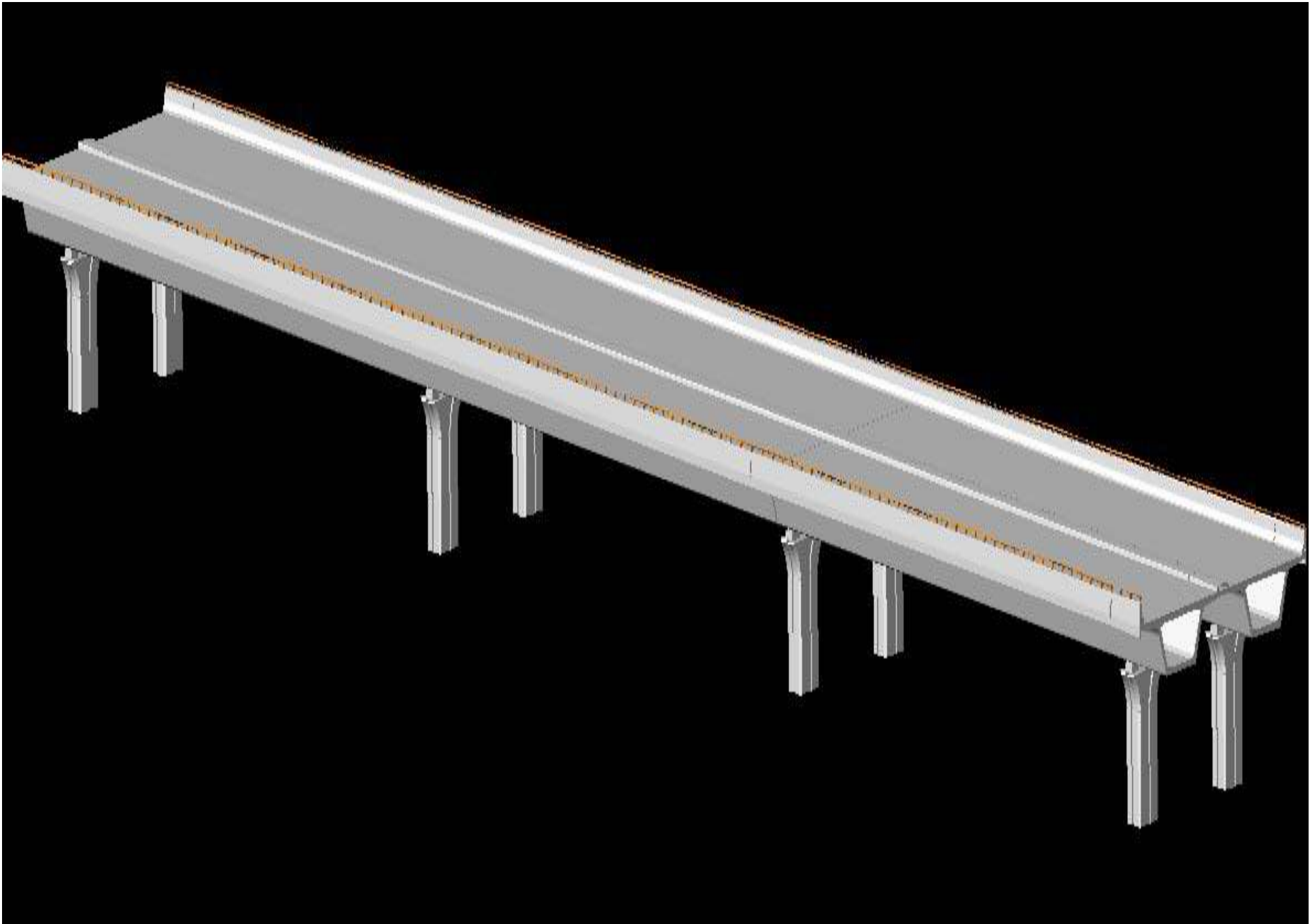
FINISHED FLYOVER



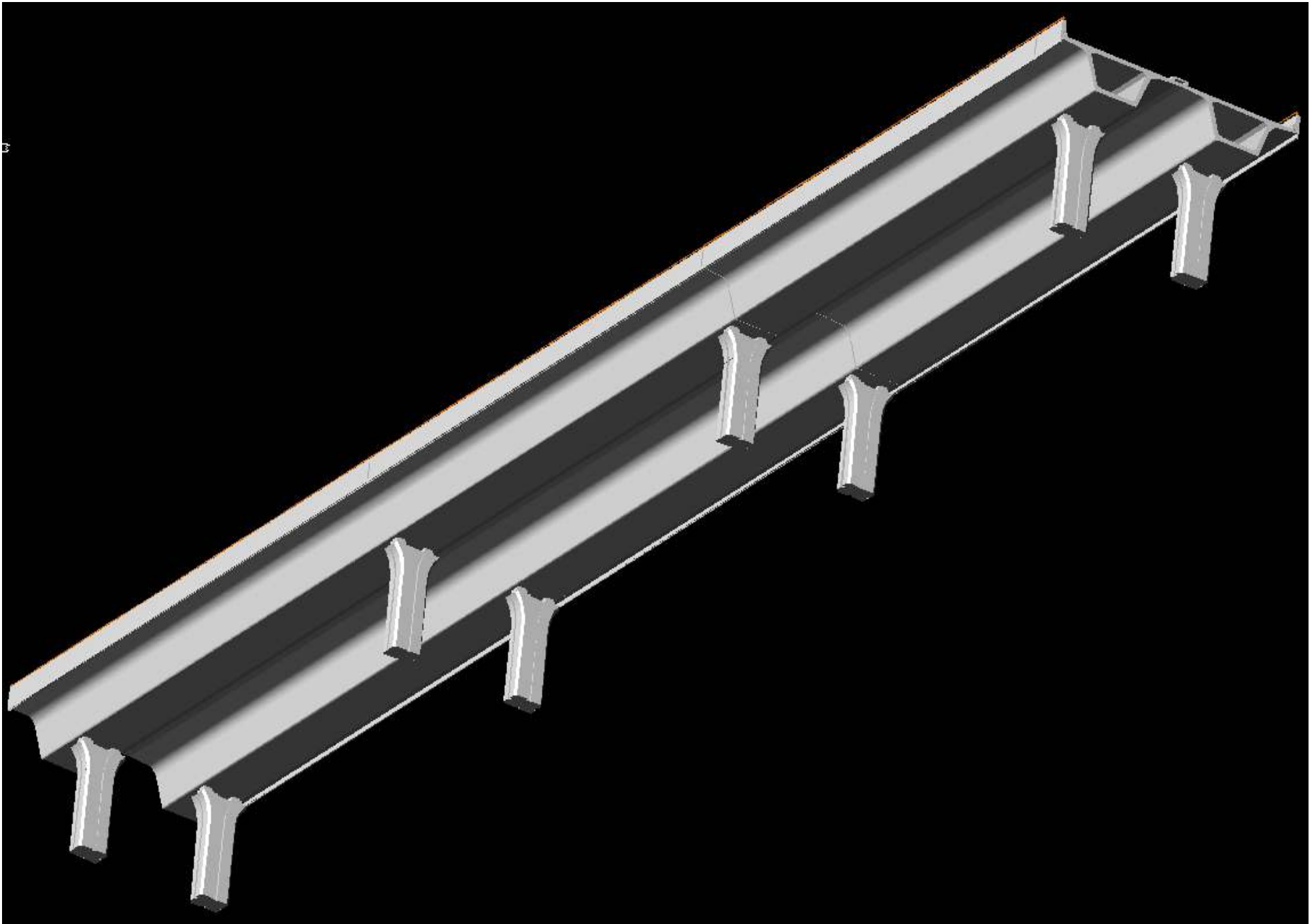
GENERAL SECTION OF FLYOVERS SHOWING PIPELINE



PILING IN DIFFICULT CONDITIONS CREATED BY OLD WATER MAINS



PERSPECTIVE:1 - TOP VIEW



PERSPECTIVE:2 - BOTTOM VIEW



AMBEDKAR ROAD FLYOVER, MUMBAI, AFTER COMPLETION



READY FOR MATCH CASTING



MATCH-CASTING IN PROGRESS



CASTING YARD MOULDS WITH ADJUSTABLE BED



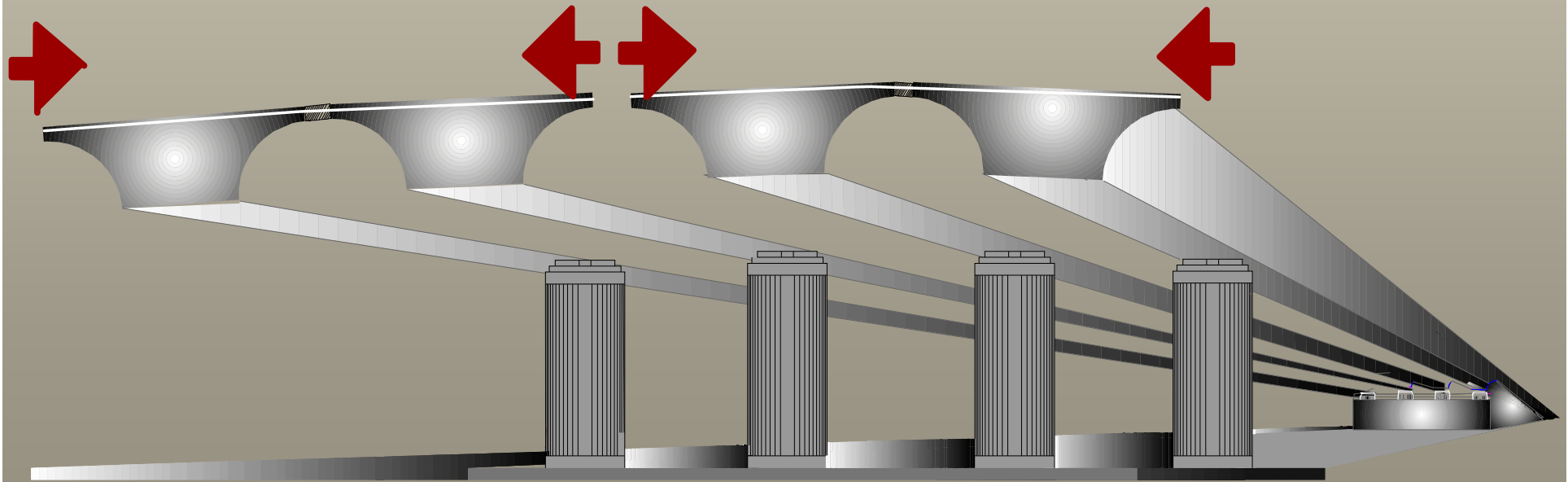
PREPARATION FOR LAST SPAN ERECTION



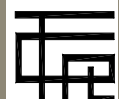
ERECTION TRUSS WT 52t

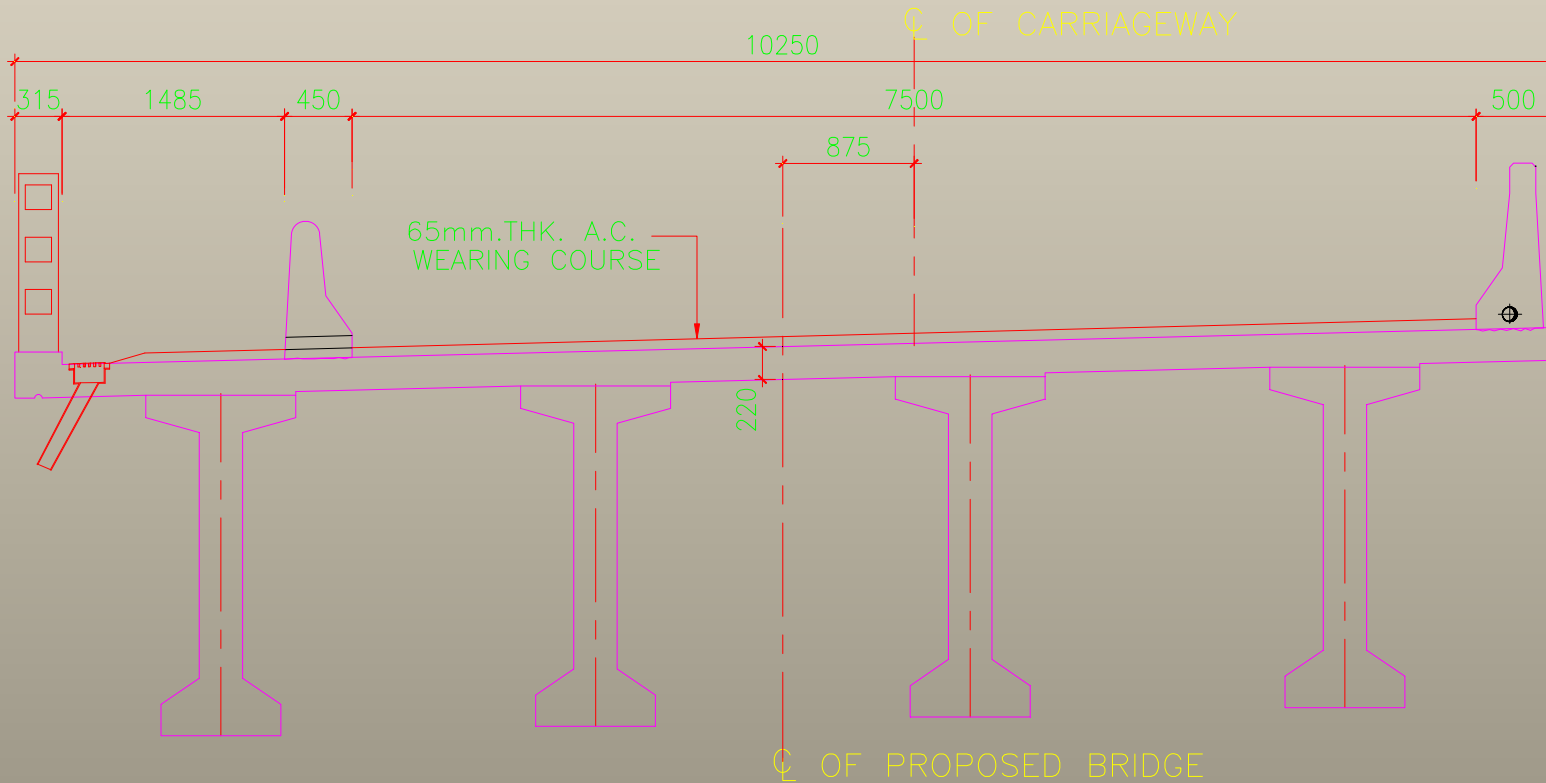
PRECAST SEGMENTAL FLYOVERS FOR DELHI GOVT ERECTION
OF *FOUR* INDEPENDENT SUB-BRIDGES
IN PROGRESS

STRESSING



DELHI FLYOVERS:
CONSTRUCTION METHODOLOGY





SECTION OF HALF DECK FOR 45m SPAN

COHIN PORT CONNECTIVITY BRIDGE

FULL GIRDERS DIFFICULT TO ERECT

GIRDERS CAN BE TRANSPORTED ONLY BY BARGE





**HANGING GIRDERS OF GURGAON:
NEARING COMPLETION**



VIEW OF CASTING YARD SHOWING STORAGE OF GIRDER SEGMENTS



85^t PLATE GIRDERS USED FOR SEGMENT ASSEMBLY



GIRDER SEGMENTS Wt 30t EACH



80t BARGE MOUNTED CRANE ERECTING THE GIRDER SEGMENTS



SEGMENTS PLACED WITH GAPS ON ASSEMBLY GIRDER

TOTAL WT 150t



SEGMENT SPLICING AND DIAPHRAGM STUBS

**FULL SPAN
PRECAST
CONSTRUCTION**

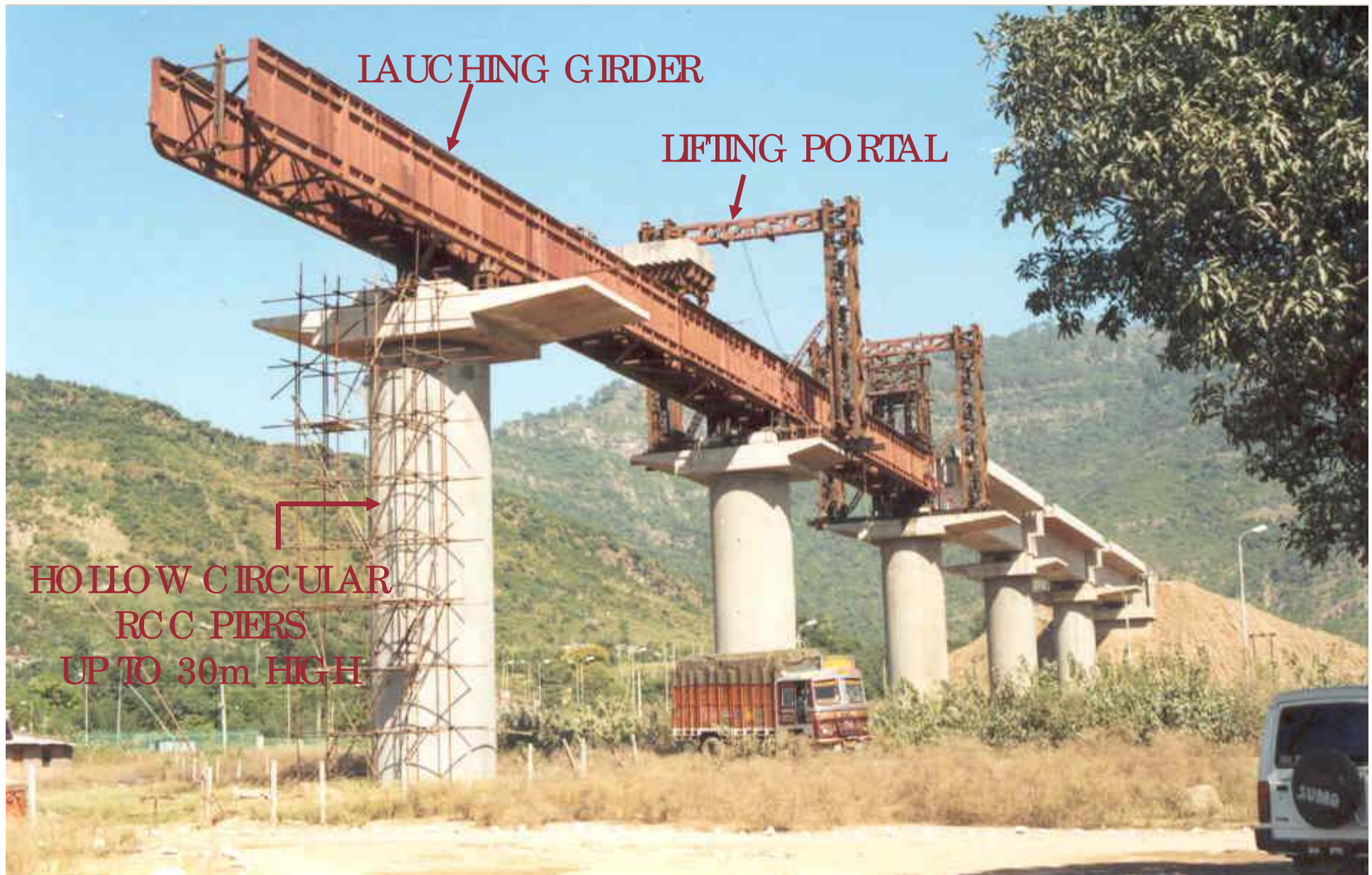


The diagram illustrates the full-span launching process for a box girder bridge. It shows a cross-section of the bridge structure supported by three piers. A truss structure is positioned above the piers, and a horizontal beam labeled 'FIRST GIRDER' is being moved from left to right. The ground is depicted with a textured, dark blue surface. The background is a solid dark blue color.

FIRST GIRDER

BOX GIRDER LAUNCHING

JURL(E18 BRIDGE): FULLSPAN LAUNCHING



LAUNCHING GIRDER

LIFTING PORTAL

HOLLOW CIRCULAR
RCC PIERS
UP TO 30m HIGH

JAMMU UDHAMPUR RAIL LINK - VIADUCT 18

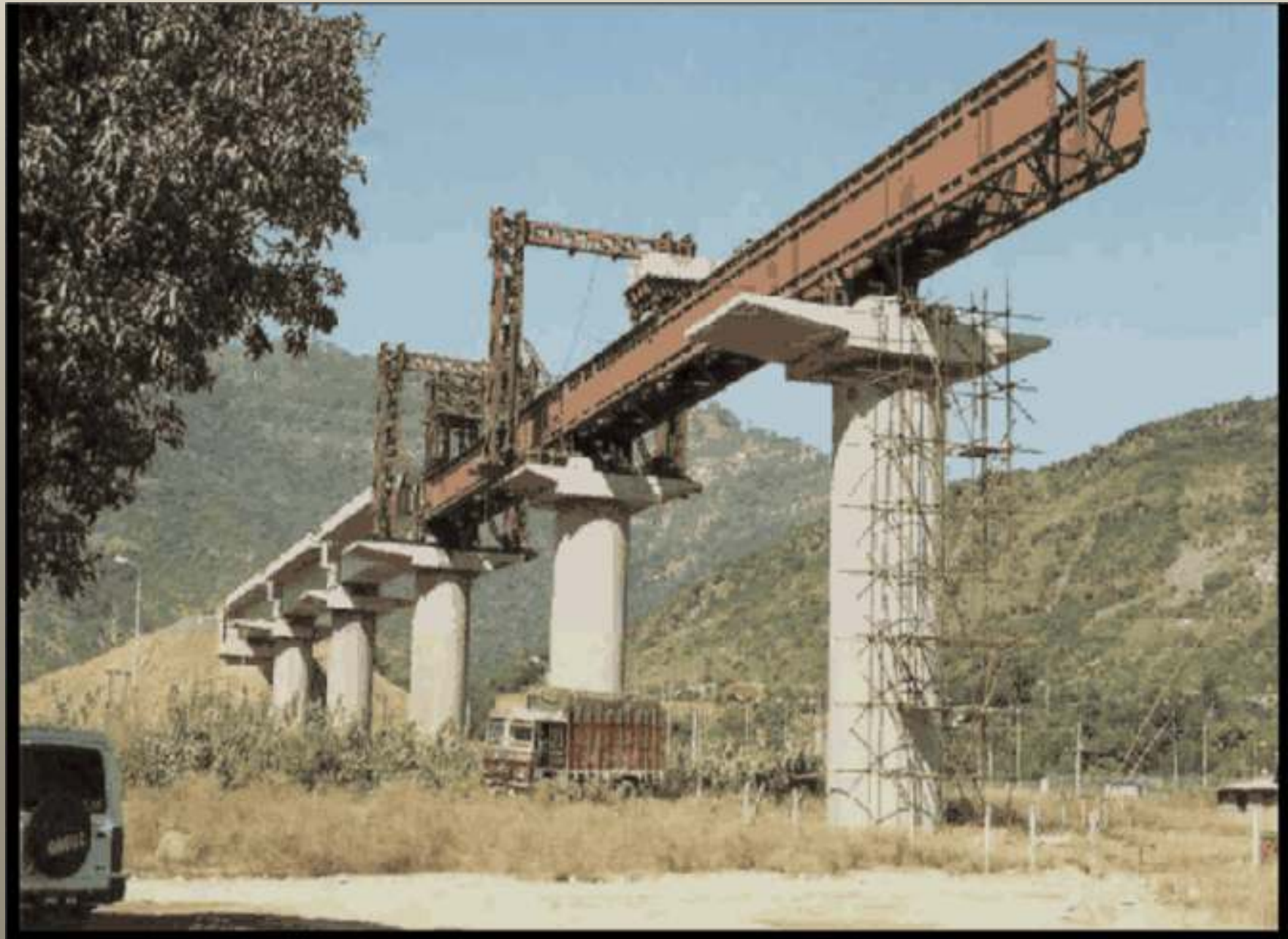
**SHOWING LAUNCHING GIRDERS, LIFTING PORTALS AND
POSITIONED PSC BOX GIRDERS**

C O U N T E R W E I G H T

400 T P S C G I R D E R



JURL: VIADUCTE18
LIFTING OF PSC GIRDER IN ORDER TO MOVE LAUNCHING GIRDER
FORWARD



JURL (E18 BRIDGE): FULLSPAN LAUNCHING



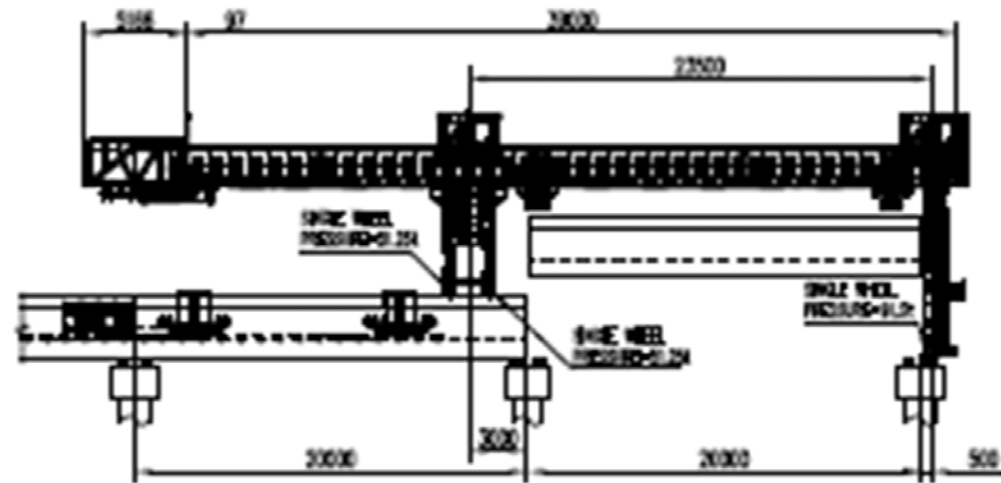
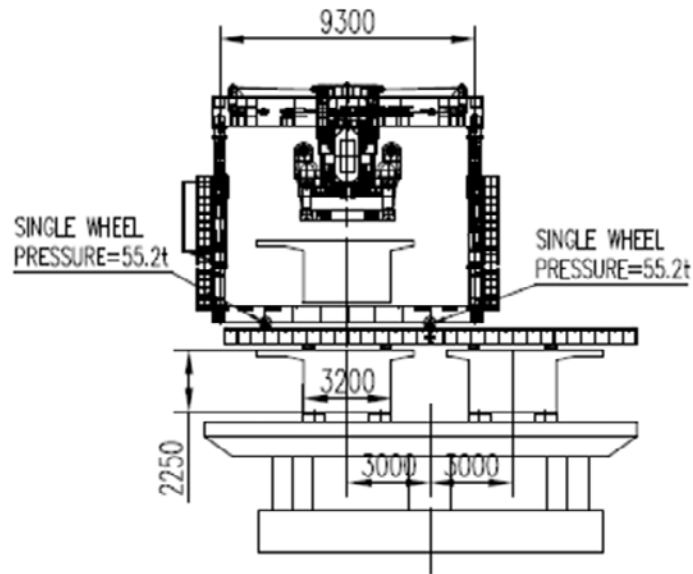
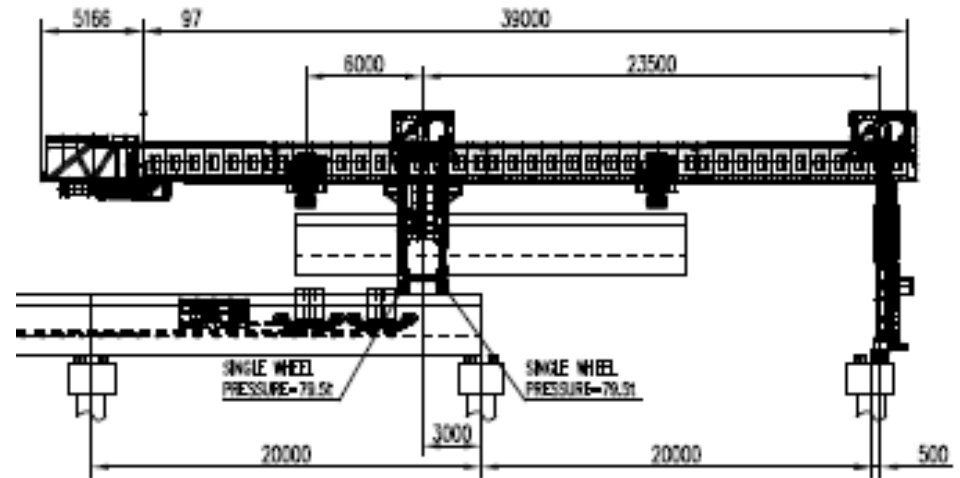
BRIDGE NO.228

04/03/2013

DFCC

BRIDGE NO. 228





DFCC: SEQUENCE OF ERECTION

BRIDGE NO. 228



04/03/2013

BRIDGE NO.228



04/03/2013

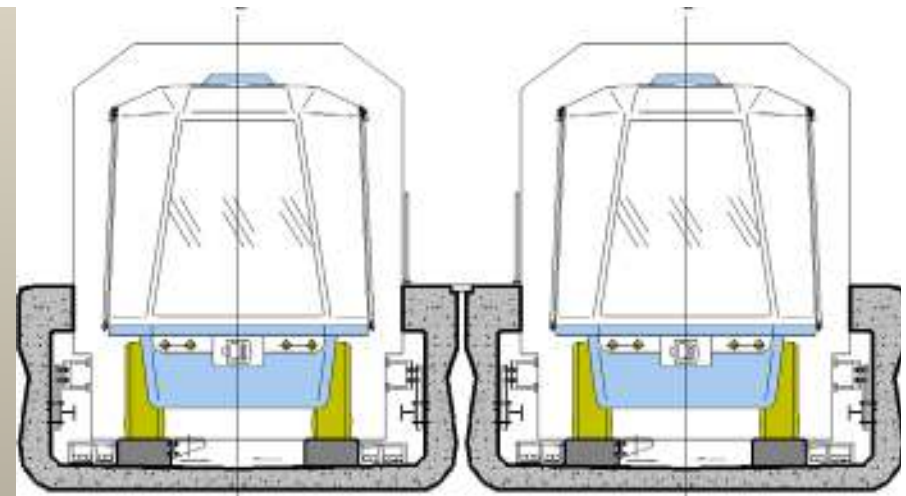
BRIDGE NO. 228



04/03/2013

Simple spans upto 28m

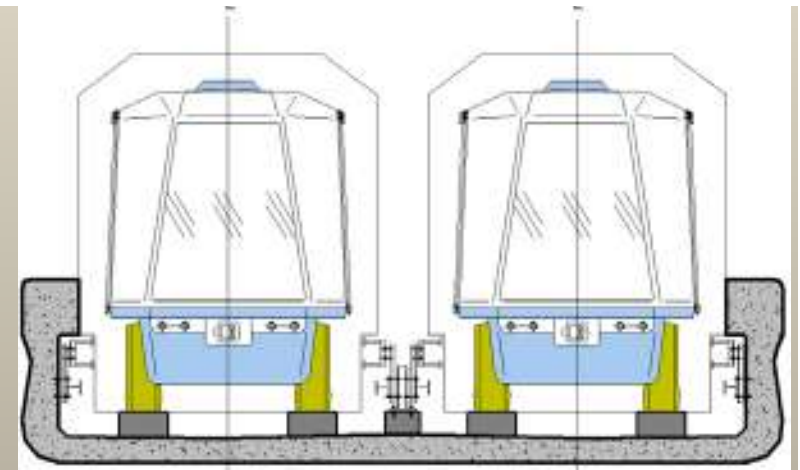
MEIRO



AIRPORT LINE DELHI
MUMBAI
COCHIN
LUCNOW

FULL SPAN PRECAST U GIRDER FOR EACH TRACK

Simple spans from 17m to 34m



DEHI LINE 3

PRECAST SEGMENTAL U GIRDER FOR TWO TRACKS









THANK YOU