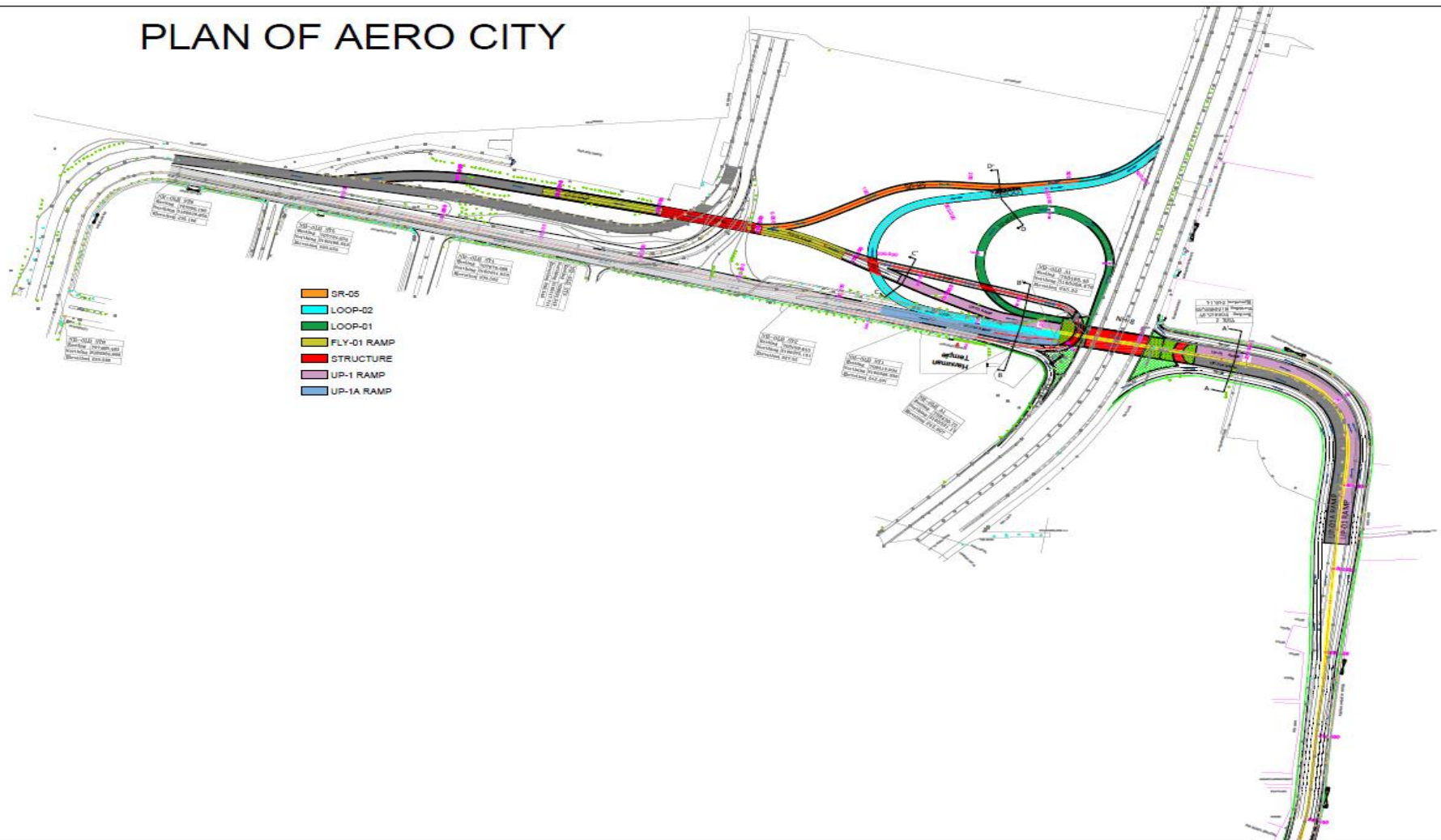


PROVIDING CONNECTIVITY BETWEEN NORTH MAHIPALPUR BYPASS ROAD, NH-8 AND NORTHERN ACCESS ROAD FROM AIRPORT BY CONSTRUCTION OF FLYOVER / UNDERPASS

PLAN OF AERO CITY



Introduction

- The work initially planned by PWD, Govt. Of Delhi to be constructed by them.
- It was later decided that a central agency would do the construction.
- Work entrusted to CPWD by MoH&UA on 05/10/2017.
- It was decided to lay Foundation Stone on 23.01.2018.

Initial Planning

- **The Project Zone was created on 17.10.2017.**
- **The dedicated Division started to function with joining of EE in November 2017.**
- **Paucity of time meant appointment of consultant for detailed planning was not possible.**
- **Decided to carry out work in EPC mode.**
- **Initial planning of PWD adopted.**

Contract Document

- No standard format for EPC contracts in CPWD was available.
- Decided to follow document of NITI Ayog.
- NIT of PWD, Delhi for infrastructure work also followed.
- Preliminary drawing prepared by PWD, Delhi was followed for tendering.

Sanction

- DDA is the project owner.
- PE for Rs 188 Crores was submitted on 16/11/2017.
- A/A & E/S amounting Rs. 188 Crores received from DDA on 11/12/2017.
- UDF component was Rs. 150 crore & balance Rs. 38 crore to be paid by DDA.

Approvals and Award of Work

- Clearance of UTTIPEC received on 11/01/2018
- Approval of DUAC received on 09/04/2018
- AAI granted NOC for height clearance on 22.04.2016. Working Permission received from AAI on 02.08.2017 to construct on AAI land measuring 3659 sqm.
- NHAI agreed “in principle” on 10.03.2016 for providing connectivity with NH-8.
- Permission for felling trees ????

Starting the work

- Taken up in EPC mode with Estimated cost put to Tender Rs.161.18 Crores
- Work awarded to M/s Gawar Construction Ltd. at tendered value of Rs. 140 Crore.
- As per contract, date of start was 30.01.2018 & date of completion is 05.03.2019
- The work was to be completed in 400 days.

Foundation Laid by Hon'ble MoS on 23.01.2018



Flyover and Underpass near IGIA.



Kotak Mahindra Bank

कोटक
महिन्द्रा बैंक

MANDI
मंडी

CISF CAMP
सीआईएसएफ कैंप

AEROCITY
एरोसिटी

BLOCK B
ब्लॉक B

MAHIPALPUR
EXTENSION
महिपालपुर
एक्सटेंशन

CISF UNIT GBS

IGI Rd

MAHIPALPUR
महिपालपुर

Mahipalpur - Rangpuri Road

MAHIPALPUR
VILLAGE
महिपालपुर
गाँव

BLOCK K I
BLOCK K I

BSES
Bill

Major components

- **2X 3 Lane Vehicular Underpass below NH-8**
- **Slip roads, Ramps and Loops for turning movements**
- **Unidirectional Flyover (F1) in front of existing Tunnels in Airport area**
- **Unidirectional Flyover near Vasant Kunj (F2)**
- **2 small vehicular underpasses for crossing loops**
- **Widening of existing roads in influence area along with construction of Drains and Footpath**
- **Lighting, Road Signs and markings etc.**

Cautionary Boards



Barricades at site



Briefing of Workers



Underpass

Underpass

- **2X 3 Lane Vehicular Underpass below NH-8**
- **6 RCC boxes in each carriageway, 135m long**
- **M-45 Grade concrete**
- **60m by Box Pushing and 75m by Cast in Situ**
- **Internal Size 11m wide, 5.9m high**
- **1m thick all round**
- **Weight of each box – 950 MT**
- **Cushion on top of box- 2m towards Airport and 3m towards Vasant Kunj**

Pushing of Boxes

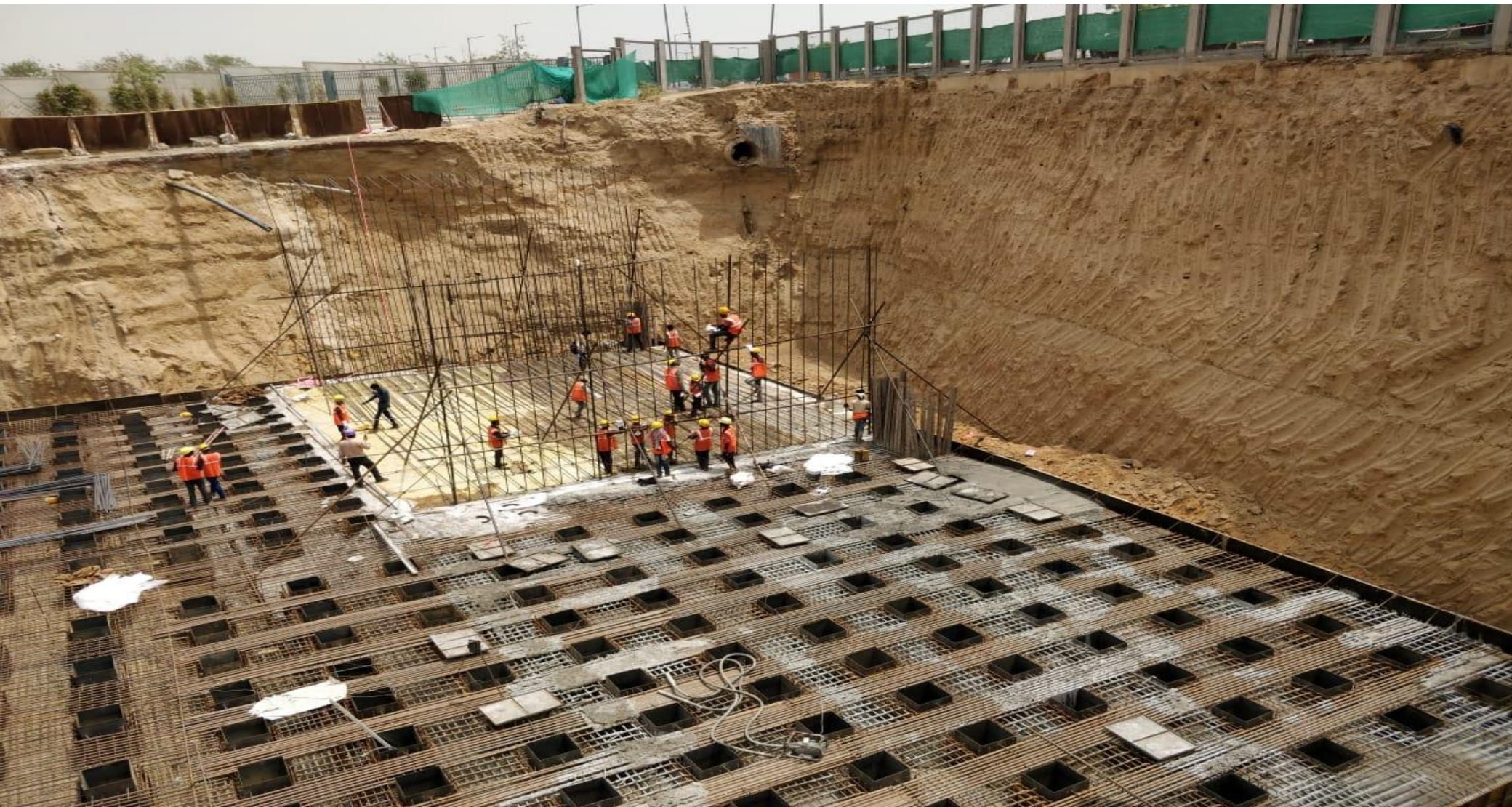
- Pushing of boxes was done with the help of Hydraulic Jacks.
- Pushing became very difficult as hard rock was encountered after pushing of first box only.
- 10 to 80 jacks of 150 MT and 300 MT capacity used.
- Rock cutting was done with the help of rock breakers as explosion was not allowed.

Preparation for Thrust Bed



Thrust Bed

Casting of Thrust Bed



Shuttering for Box



Reinforcement of Box



Casting of Box



Pushing in Progress



**Rock in front
of
vertical
cutting edge**

**(Box towards
Vasant Kunj)**



Rock face in box towards V. Kunj



Rock Excavation in Box



Rock Cutting in Box



Pile of excavated rocks



PCC for Cast in Situ Box



Reinforcement for Cast in Situ Box



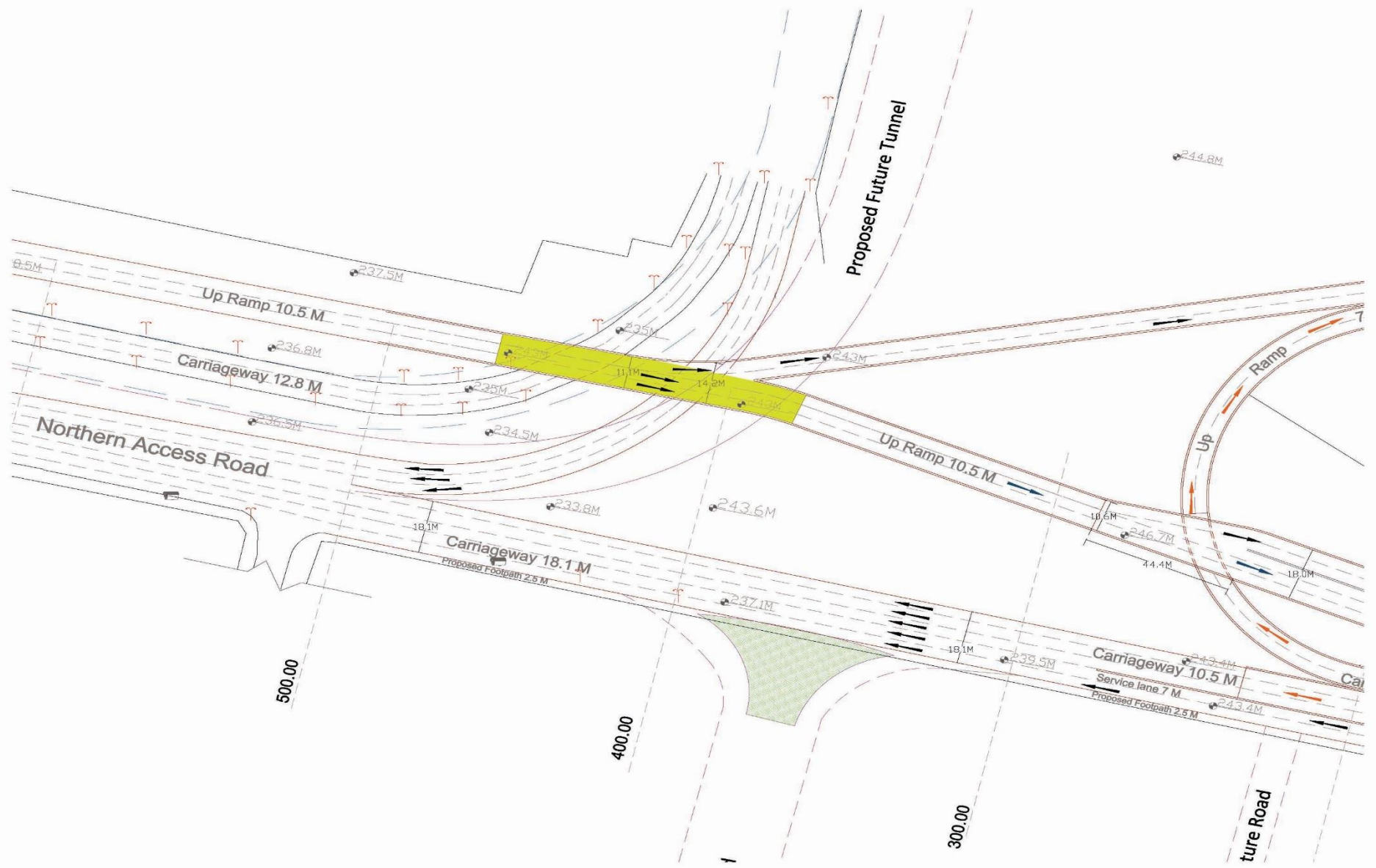
Cast in situ part towards Mahipalpur



Coordinates checking of Box Movement

Box-02						Box-02					
Date: / /						Date: / /					
Page No.						Page No.					
DATE	CHAINAGE	BOX-NO SIDE	THEORETICAL (X)	ACTUAL (X)	DIFF	THEORETICAL (Y)	ACTUAL (Y)	DIFF	THEORETICAL (Z)	THEORETICAL (Z)	DIFF
24/12/08	72.500	Box-02 Delhi Gurgaon	708511.810	708511.683	73 mm	3160327.645	3160327.567	78 mm	236.355	236.522	167 mm
			708509.219	708509.321	72 mm	3160316.901	3160316.820	81 mm	236.355	236.520	165 mm
	73.000	Box-02 Delhi Gurgaon	708512.097	708512.172	75 mm	3160327.533	3160327.457	76 mm	236.355	236.524	169 mm
			708509.736	708509.809	73 mm	3160316.789	3160316.710	79 mm	236.355	236.522	169 mm
25/12/18	73.500	Box-02 Delhi Gurgaon	708512.585	708512.660	75 mm	3160327.412	3160327.347	74 mm	236.355	236.527	172 mm
			708510.225	708510.299	74 mm	3160316.682	3160316.606	76 mm	236.355	236.525	170 mm
	74.000	Box-02 Delhi Gurgaon	708513.075	708513.151	76 mm	3160327.318	3160327.244	74 mm	236.355	236.528	173 mm
			708510.713	708510.786	73 mm	3160316.575	3160316.500	75 mm	236.355	236.526	171 mm
26-12/18	74.500	Box-02 Delhi Gurgaon	708513.562	708513.637	75 mm	3160327.211	3160327.136	75 mm	236.355	236.525	170 mm
			708511.201	708511.275	74 mm	3160316.467	3160316.393	74 mm	236.355	236.524	169 mm
27/12/18	75.000	Box-02 Delhi Gurgaon	708514.050	708514.126	76 mm	3160327.098	3160327.020	78 mm	236.355	236.520	165 mm
			708511.688	708511.764	76 mm	3160316.355	3160316.276	79 mm	236.355	236.520	165 mm
	75.500	Box-02 Delhi Gurgaon	708514.538	708514.614	76 mm	3160326.991	3160326.913	78 mm	236.355	236.520	165 mm
			708512.175	708512.252	77 mm	3160316.247	3160316.167	80 mm	236.355	236.520	165 mm
28/12/18	76.000	Box-02 Delhi Gurgaon	708515.028	708515.104	76 mm	3160326.894	3160326.815	79 mm	236.355	236.520	165 mm
			708512.667	708512.745	78 mm	3160316.150	3160316.069	81 mm	236.355	236.522	167 mm
	76.500	Box-02 Delhi Gurgaon	708515.515	708515.591	76 mm	3160326.776	3160326.697	79 mm	236.355	236.519	164 mm
			708513.154	708513.231	77 mm	3160316.033	3160316.953	80 mm	236.355	236.521	166 mm

Bridge in Airport area FO-1



Site for FO-1



FO-1

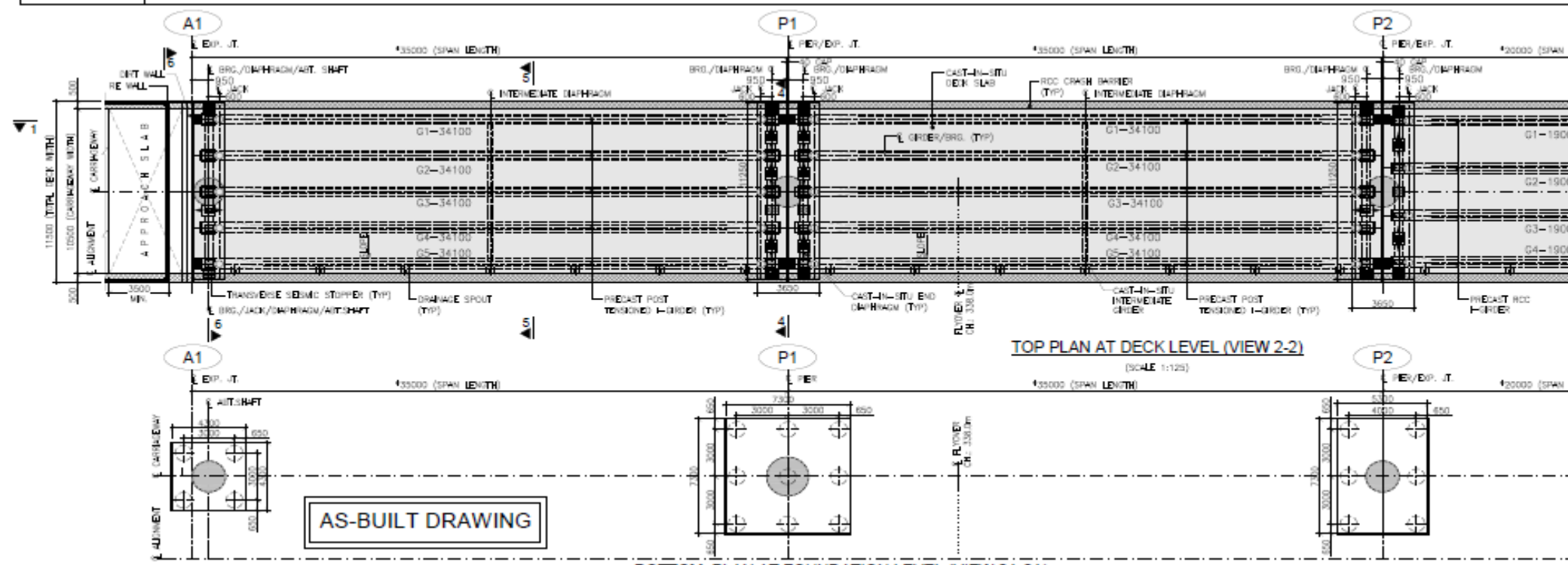
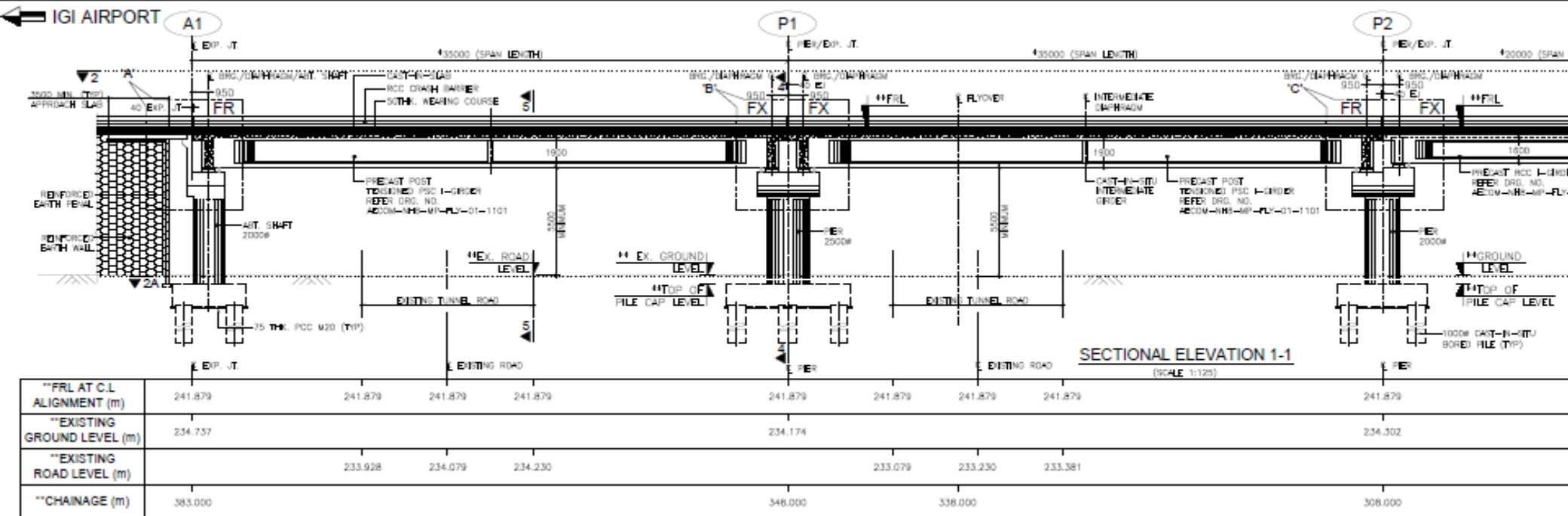
- 3 Spans
- A1-P1, 35m, towards Airport & over existing road
- P1-P2, 35m, Middle Span over existing road
- P2-A2, 20m, end span towards NH-8
- Concrete Grade- M45
- Foundation
- A1- 4 Piles, 1m dia, 22m long
- P1- 9 Piles, 1m dia, 26m long (Fixes pier)
- P2- 8 Piles, 1m long,
- A2- 4 Piles, 1m dia,
- All Piles in M-45 Concrete



Piling Work

Substructure for FO-1





- Deck Slab 210mm thick
- Girders 650x1600mm for 20m span and 650x1900mm in 35m span
- Post Tensioned Girders in M-50
- Normal girders in M-45
- Piers 2m in dia except fixed pier of 2.5m dia
- Piers and Pier caps in M-45

Erection of 35 m Long Girder



Bridge on Airport side



Bridge on Airport side



Flyover near pocket E-2 Vasant Kunj, FO-2



PLAN



PROVIDING CONNECTIVITY BETWEEN NORTH MAHIPALPUR BYPASS ROAD, NH-8 AND NORTHERN ACCESS ROAD FROM AIRPORT BY CONSTRUCTION OF FLYOVER / UNDERPASS

PROPOSAL

PART B : AT Y JUNCTION NEAR POCKET E

RIGHT TURN & LEFT TURN

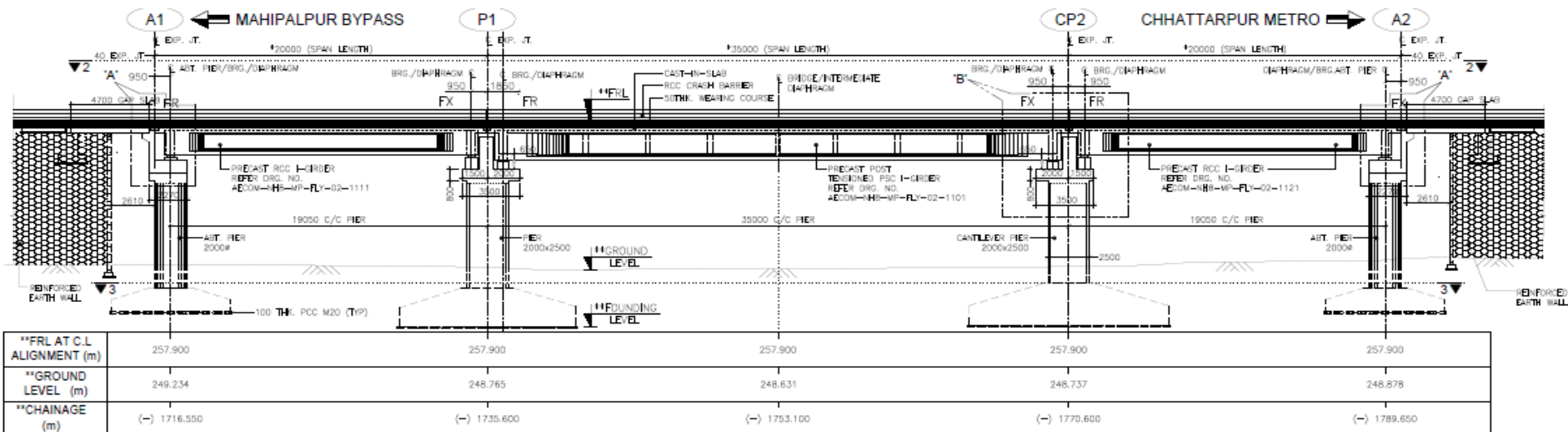
TO AIRPORT VIA MAHIPALPUR

TO AIRPORT VIA NORTHERN ACCESS ROAD



TO VASANT KUNJ

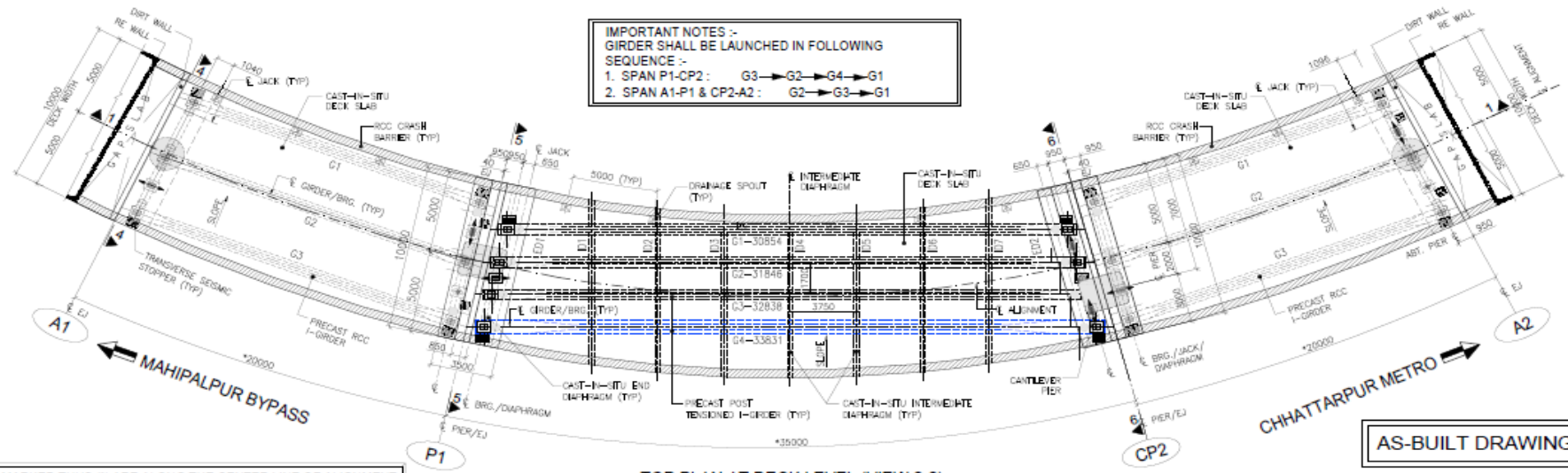




SECTIONAL ELEVATION 1-1
(SCALE 1:40)

** FOR LEVELS PLAN & PROFILE REFER DRG. NO. CIPLD1014/HYW/DEG/P&P/001

IMPORTANT NOTES - GIRDER SHALL BE LAUNCHED IN FOLLOWING SEQUENCE -
 1. SPAN P1-CP2 : G3 → G2 → G4 → G1
 2. SPAN A1-P1 & CP2-A2 : G2 → G3 → G1



TOP PLAN AT DECK LEVEL (VIEW 2-2)
(SCALE 1:125)

DIMENSIONS MARKED THUS (*) ARE ALONG THE CENTER LINE OF ALIGNMENT

AS-BUILT DRAWING

FOR NOTES, LEGENDS & PREFERENCE DRAWINGS SHEET 4 OF 4 OF THIS DRAWING.

REV	NO	DATE	BY	CHK	APP	DESCRIPTION OF REVISIONS	CLIENT: CENTRAL PUBLIC WORKS DEPARTMENT (GOVERNMENT OF INDIA)	CONTRACTOR: M&G CONSTRUCTION LTD. 8F-41, 2ND GALLERIA, SECTOR-48, SOHNA ROAD, GURGAON-122002 GURU, INDIA TEL: +91-124-4536001 FAX: +91-124-4536002 Email: info@mgcl.com	CONTRACTOR'S CONSULTANT: AECOM Built to deliver a better world AECOM INDIA PRIVATE LIMITED 9th Floor, Embassy Tower C, DLF Cyber City, DLF Phase-4, Gurgaon-122002, HARYANA, INDIA. www.aecom.com	PROJECT: CONSTRUCTION OF CONNECTIVITY BETWEEN NORTHERN MAHIPALPUR BYPASS ROAD, NH-8 & NORTHERN ACCESS ROAD FROM AIRPORT AND UNDERPASS CROSSING NH-8 BRIDGE NEAR STUTTY AREA OF AIRPORT AND UNDERPASS AT JUNCTION OF REHALLA MAHIPALPUR BYPASS ROAD ALONG WITH GRADE SEPARATORS AT OTHER LOCATIONS, LOOPS, RAMPS, FOOTPATH, ROAD WORK INCLUDING ROAD SIGNAGE, ROADSTREET LIGHTING WORKS, DRAINAGE, RAIN WATER HARVESTING ETC.	STRUCTURE: FLYOVER-02 AT CH. (-) 1753.100	TITLE: GENERAL ARRANGEMENT DRAWING FOR FLYOVER-2	SHEET NO. OF 4 SH. 1 OF 4

- Due to the Rock at 6 m depth, open foundation has been constructed.
- Due to eccentricity in one column, the foundation size was 13 x 12 m.
- Both Ramps have been constructed with Reinforced Earth Walls.

FO-2

- 3 Spans in curve
- 20m – 35m – 20m
- Open foundations
- Girders 1.6m deep for 20m span and 1.9m to 2.5m for middle span
- Concrete
 - M45 for Abutments
 - M55 for piers P1 and P2
 - M60 for post tensioned girders
 - M 45for normal girders

Substructure for F02, Vasant Kunj



Abutment of FO-2

2018-10-23 17:01



Construction of Ramp in progress



Transportation of 35 m Girder



Deck slab of Flyover





RE Wall Mahipalpur Gurgaon Side 05.01.2019



RE Wall – U/Pass Ramp - V Kunj 05.01.2019



Small Underpass in Loops



CC Pavement



Groove cutting in CC Pavement



Flexible Pavement





Specifications for Road Work

- **Flexible Pavement**

- I. Preparation of Subgrade
- II. 300 mm thick GSB over Subgrade
- III. 250 mm thick WMM over GSB
- IV. Prime coat and 60-70 mm thick BM
- V. Tack Coats and 60-70 mm thick DBM
- VI. 50 MM DBC

- **Rigid Pavement**

- I. 150 mm thick layer of GSB over subgrade in Ramps/loops connected with Underpass
- II. Laying DLC 150 mm thick and compacting with roller
- III. Laying PQC M-40 grade, 300 mm thick with Recron 35 polyester 12 mm long, fibre or equivalent using SLIP FORM PAVER

Road Widening Work

- Widening for Slip road along Flyover near Vasant kunj.
- Widening for accommodating underpass ramp on Mahipalpur bypass road
- Construction of new slip road near underpass on Mahipalpur bypass road

Casting of drain along loop



Casting of Storm Water drain



Visit of DG





Visit of DG

Some figures about the project

- Total 13500 MT Cement used in the work
- 2000 MT reinforcement steel used in the work
- Approx. 30000 Cu. Mt concrete poured
- Most of the work carried out with M-45 Grade RCC

Factors affecting progress of work

Permission for cutting trees(98 Nos.)

Permission required for

(i) Trees in Ridge area (Mahipalpur)

(ii) Trees in non-Ridge area (Airport)

(a) Permission for non-Ridge area is to be granted by Govt. of Delhi.

(b) Permission for Ridge area is to be granted by Union MoEF.

Project area falling in Ridge

(V. Kunj Flyover side area lying in South Delhi Ridge)



Project area falling in Ridge

(Minor area of Underpass Down Ramp in Morpho. Ridge)



Inauguration on 28.02.2019

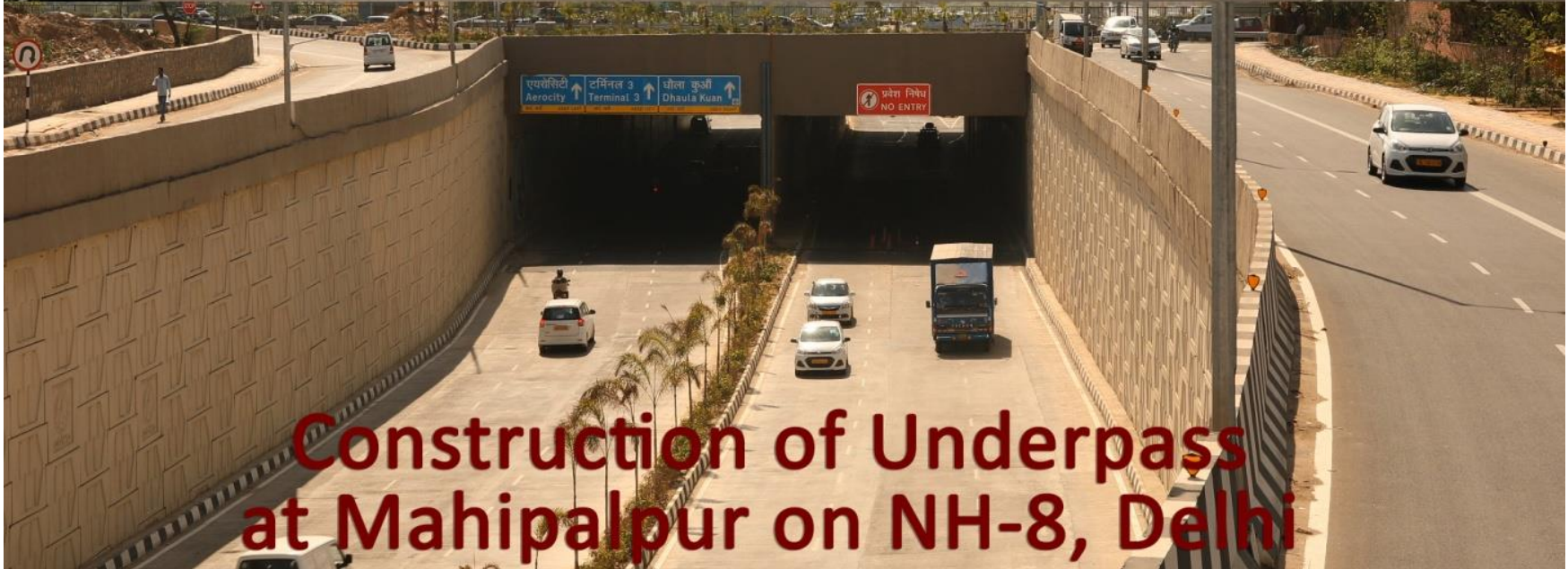




एयरोसिटी ↑ टर्मिनल 3 ↑ धोला कुआँ ↑
Aerocity ↑ Terminal 3 ↑ Dhola Kuan ↑

प्रवेश निषेध
NO ENTRY

Underpass from Vasant Kunj



**Construction of Underpass
at Mahipalpur on NH-8, Delhi**

U Turn towards Vasant Kunj





FO-2, Vasant Kunj to Airport

FO-2, Vasant Kunj to Airport





Flyover in Aerocity



महिपालपुर
Mahipalpur
एयरपोर्ट
Airport
धीला कुआँ
Dhaura Kuan

FO-2, Under-deck

Thank you

