付録 1. ベンチマークの概要

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

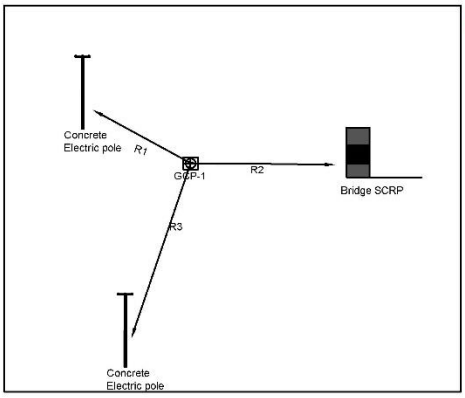
Station :GCP-1 **ProvinceNo:3** **Location:Shantinagar,Kathmandu**	**Municipality:Kathmandu** **Monumentation Date : 20/11/2076**

Station Type :Stable concrete structure with 150mm iron nut bolt drilled.

Description : This point is monumented on a RCC concrete slab by drilling and hammering 150mm iron Nut bolt and marked by a red enamel paint. This point is located about 10m away from the Shantinagar Bagmati bridge. It is located at the right side of the main road while moving ahead from New Baneshwor to Tinkune. Point GCP-2 is visible from this point.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH

Refrence Point Mesurements:-

R1	5.488 m
R2	12.310 m
R3	13.591 m

STATION :GCP-1

E	336627.166
N	3063561.851
Z	1294.401

VISIBLE POINT :GCP-2

E	336740.872
N	3063533.175
Z	1294.392

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

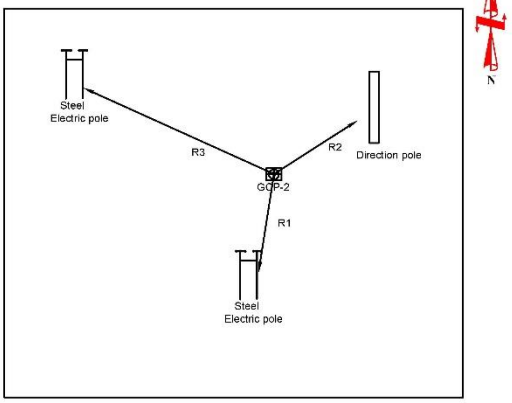
Station :GCP-2 **Province No: 3** **Location :Shantinagar, Kathmandu**	**Municipality:Kathmandu** **Monumentation Date :20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

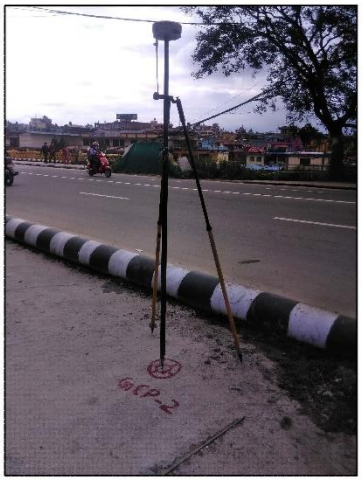
Description :This point is monument on a RCC concrete slab by drilling and hammering a 150mm Nut bolt and marked by a red enamel paint. This point is located about 15m away from right side of the Shantinagar bridge. This point is located at the left side of the main road while moving from Tinkune to New Baneshwor.GCP-1 is visible from this point.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH



Refrence Point Mesurements:-

R1	3.532 m
R2	3.196 m
R3	15.671m

STATION :GCP-2

E	336740.872
N	3063533.175
Z	1294.392

VISIBLE POINT :GCP-1

E	336627.166
N	3063561.851
Z	1294.401

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

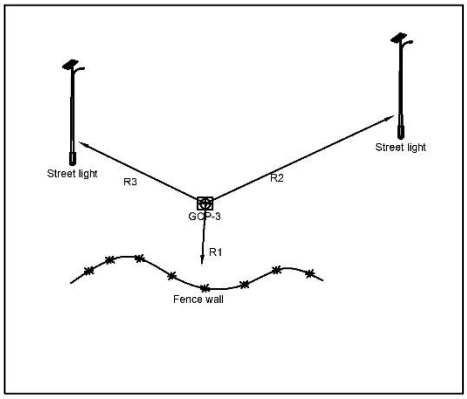
Station :GCP-3 **Province No:3** **Location :Sinamangal,Kathmandu**	**Municipality:Kathmandu** **Monumentation Date :20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

Description : This point is monumented on a RCC cancrete slab by drilling and hammering a 150mm Nut bolt and marked by red enamel paint. This point is located at the left side of the ringroad while moving from Tinkune from Sinamangal.GCP-4 is visible from this point.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH

Refrence Point Mesurements:-

R1	**7.882 m**
R2	**15.11 m**
R3	**1.75 m**

STATION :GCP-3

E	**337600.872**
N	**3064108.052**
Z	**1306.877**

VISIBLE POINT :GCP-4

E	**337651.091**
N	**3064214.252**
Z	**1312.297**

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

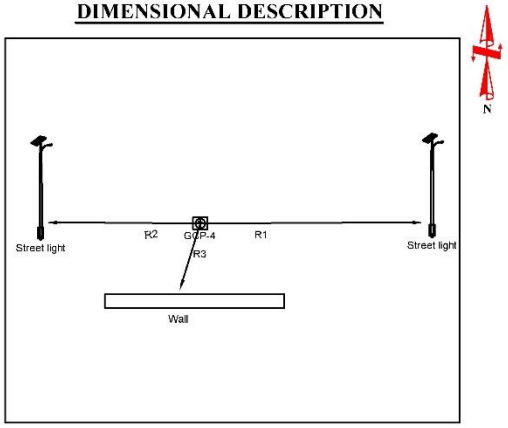
Station :GCP-4 **Province No: 3** **Location :Sinamangal,Kathmandu**	**Municipality:Kathmandu** **Monumentation Date : 20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

Description :This point is monumented on a RCC concrete slab by drilling and hammering a 150mm Nut Bolt and marked by a red enamel paint. It is located at the left side of the ring road footpath which moving towards Sinamangal to Tinkune. GCP-3 is visible from this point.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH

Refrence Point Mesurements:-

R1	8.10 m
R2	11.73m
R3	5.95 m

STATION :GCP-4

E	337651.091
N	3064214.252
Z	1312.297

VISIBLE POINT :GCP-3

E	337600.872
N	3064108.052
Z	1306.877

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU

DESCRIPTION CARD OF CONTROL POINTS

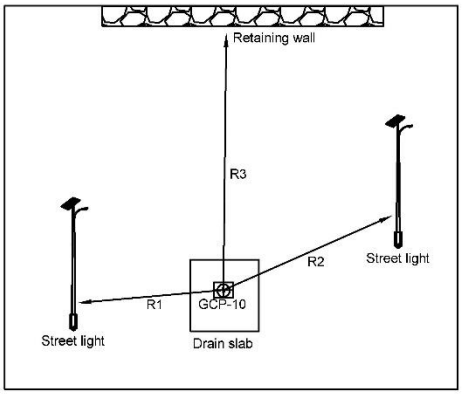
Station :GCP-5 **ProvinceNo:3** **Location:Jadibuti Bridge,Bhaktapur**	**Municipality:Madyapur Thimi** **Monumentation Date : 20/11/2076**

Station Type :Manhole Stable concrete structure with 150mm iron rod drilled.

Description : This point is monumented on a manhole concrete slab by Drilling and hammering of 150mm Nut bolt and marked by red enamel paint. It is located at the left side of the road going towards Bhaktapur. And the point is visible from GCP-6.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH

Refrence Point Mesurements:-

R1	5.703 m
R2	15.518m
R3	8.650 m

STATION :GCP-5

E	337841.5797
N	3062300.356
Z	1297.594

VISIBLE POINT:GCP-6

E	337868.0387
N	3062354.01
Z	1296.704

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

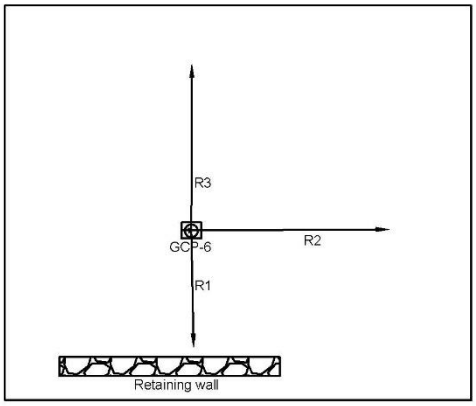
Station :GCP-6 **Province No:3** **Location :Judibuti Bridge,Bhaktapur**	**Municipality:Madyapur Thimi** **Monumentation Date : 20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

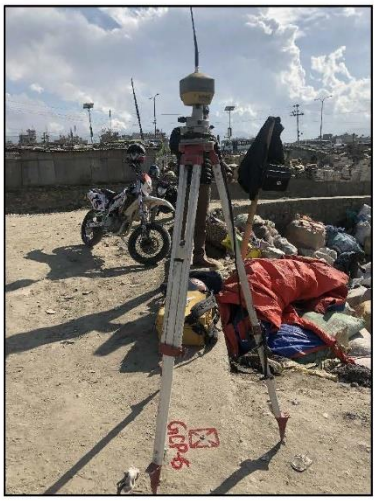
Description : This point is monumented on road retaining wall by drilling with Nut bolt of 150mm iron nail and marked by red enamel paint. It is located at Jadibuti, Bhaktapur and tentatively 70m away from highway going towards Bhaktapur. It is clearly visible from GCP-5.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH



Refrence Point Mesurements:-

R1	6.76 m
R2	8.723 m
R3	6.623 m

STATION:GCP-6

E	337868.0387
N	3062354.01
Z	1296.704

VISIBLE POINT :GCP-5

E	337841.5797
N	3062300.356
Z	1297.594

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

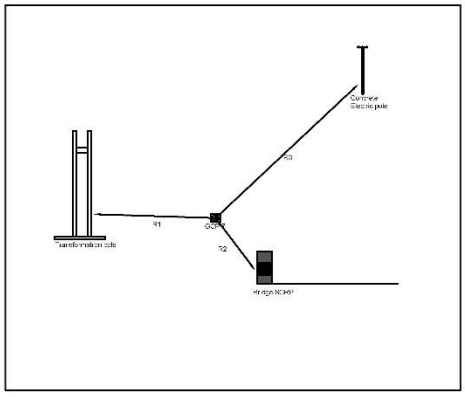
Station :GCP-7 **ProvinceNo:3** **Location:Hanumante Bridge,Bhaktapur**	**Municipality:Madyapur Thimi** **Monumentation Date :20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

Description :This point is monumented on a RCC concrete slab by drilling and hammering 150mm Nut bolt and marked by red enamel paint. This point is located at the right side of the Hanumante bridge while moving ahead from Lokanthali to Tikathali.It is located at the right side of the Hanumante river.GCP-8 is clearly visible from this point.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH

Refrence Point Mesurements:-

R1	8.312 m
R2	3.818 m
R3	18.722m

ATATION :GCP-7

E	337565.2749
N	3061523.419
Z	1291.909

VISIBLE POINT :GCP-8

E	337433.1219
N	3061488.318
Z	1289.138

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU

DESCRIPTION CARD OF CONTROL POINTS

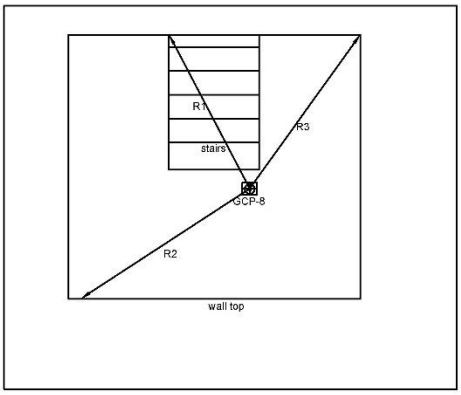
Station :GCP-8 **Province No: 3** **Location : Lalitpur**	**Municipality:Mahalaxmisthan** **Monumentation Date : 20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

Description : This point is monumented on a concrete slab by drilling and hammering a 150mm Nut bolt and marked by a red enamel paint. This point is located at the left side of the junction of Hanumante and Manohara river.It is located at the Stair top on left bank of Hanumante river.GCP-7 is visible from this pont.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH

Refrence Point Mesurements:-

R1	8.076 m
R2	7.922 m
R3	5.172 m

STATION :GCP-8

E	337433.1219
N	3061488.318
Z	1289.138

VISIBLE POINT :GCP-7

E	337565.2749
N	3061523.419
Z	1291.909

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

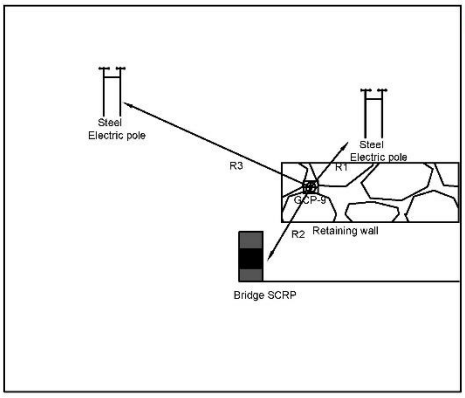
Station:GCP-9 **ProvinceNo:3** **Location :Phulbarimark,Koteshwor**	**Municipality:Kathmandu** **Monumentation Date : 20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

Description : This point is monumented on top of Retaining wall with drilling and hammering 150mm nut bolt inside the stable concrete slab and marked by red enamel paint. This point is near to Hillside college of Engineering .GCP-10 is clearly visible from this point.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH

Refrence Point Mesurements:-

R1	2.361 m
R2	3.824 m
R3	10.712 m

STATION: GCP-9

E	336566.883
N	3062233.608
Z	1304.651

VISIBLE POINT :GCP-10

E	336413.8174
N	3062075.868
Z	1287.216

PROJECT NAME:PREPARATORY SURVEY ON INTERSECTION IMPROVEMENT PROJECT IN KATHMANDU.

DESCRIPTION CARD OF CONTROL POINTS.

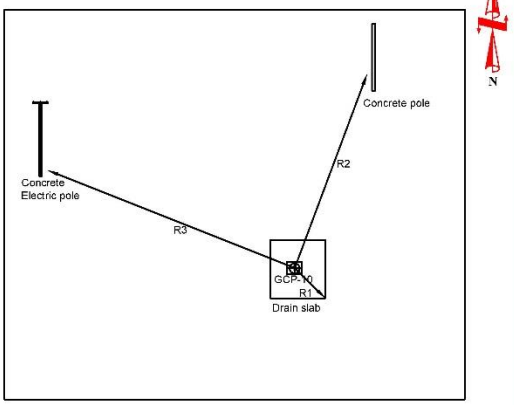
Station :GCP-10 **Province No: 3** **Location :Balkumari,Lalitpur**	**Municipality:Kathmandu** **Monumentation Date : 20/11/2076**

Station Type :Stable concrete structure with 150mm iron rod drilled.

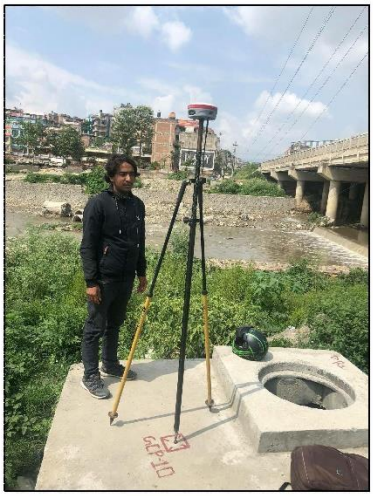
Description :This point is monumented on a RCC concrete drain slab by drilling and hammering a 150mm Nut bolt and marked by red enamel paint. This point is located at the left side of the Monohara river and tentatively 15m away from Monohora river. It is located at Right side of the Balkumari bridge while moving from Koteshwor to Satdobato.GCP-9 is clearly visible from this point.

SCHEMATIC DIAGRAM

DIMENSIONAL DESCRIPTION



PHOTOGRAPH



Refrence Point Mesurements:-

R1	1.742 m
R2	12.862 m
R3	14.184 m

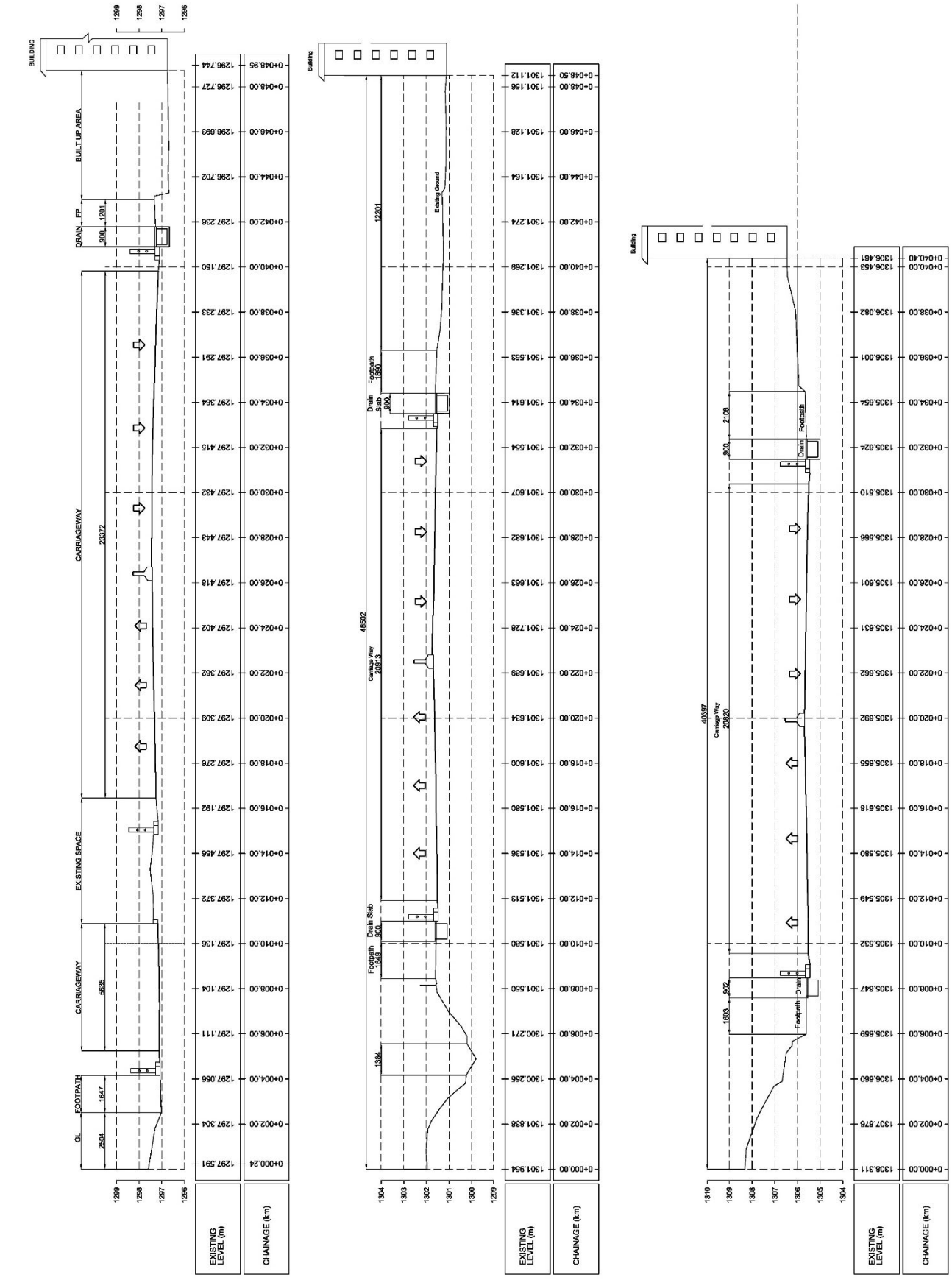
STATION: GCP-10

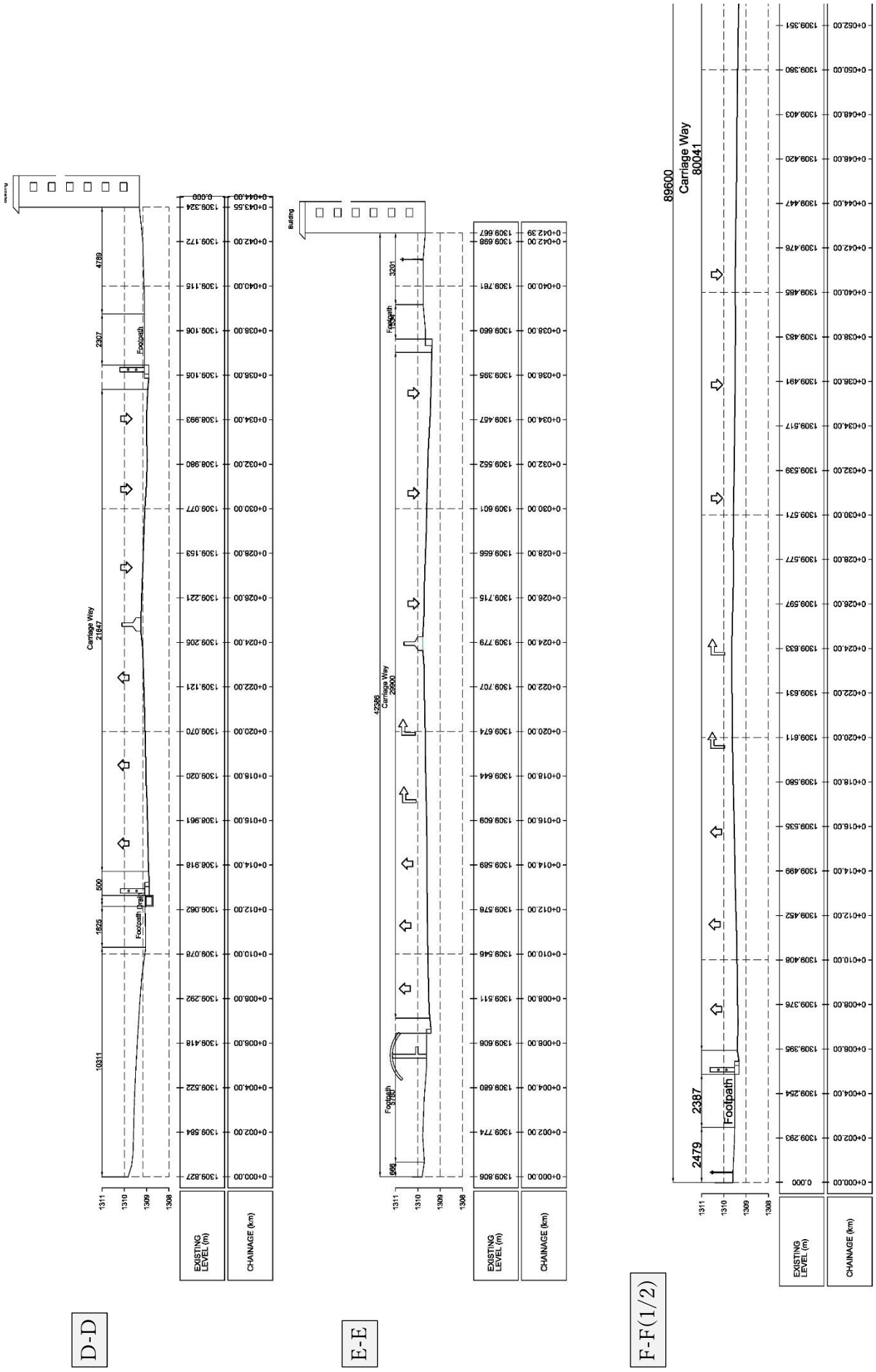
E	336413.8174
N	3062075.868
Z	1287.216

VISIBLE POINT :GCP-9

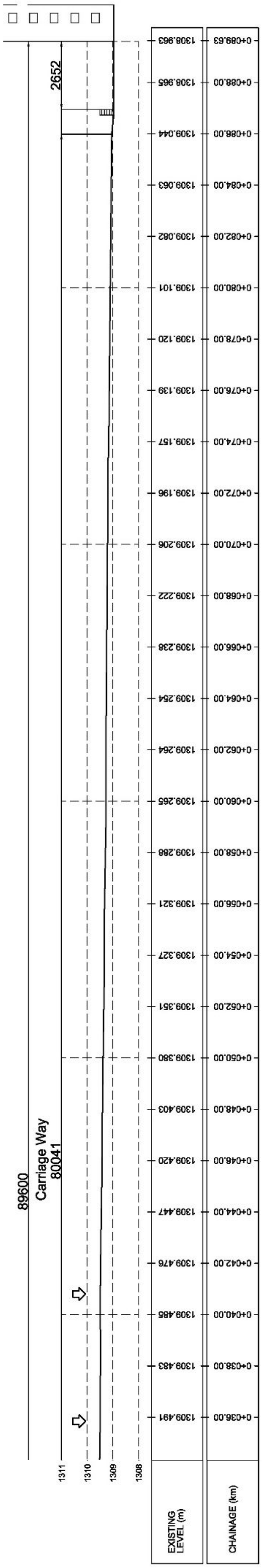
E	336566.883
N	3062233.608
Z	1304.651

付録 2. 横断測量及び地下埋設物調査結果

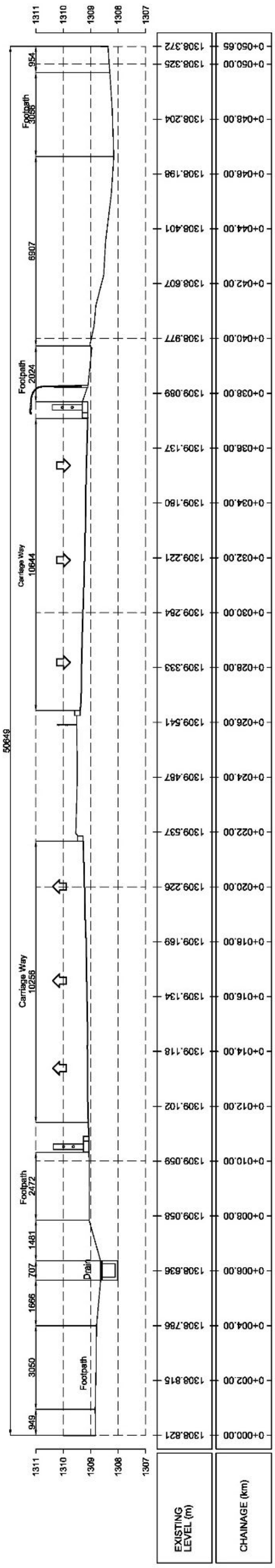

A-A
B-B
C-C
BUILDING
BUILT UP AREA
DRAIN
FP
CARRIAGEWAY
EXISTING SPACE
FOOTPATH
GL
Building
Existing Ground
Footpath
Drain Slab
Drain
Carriage Way
EXISTING LEVEL (m)
CHAINAGE (km)

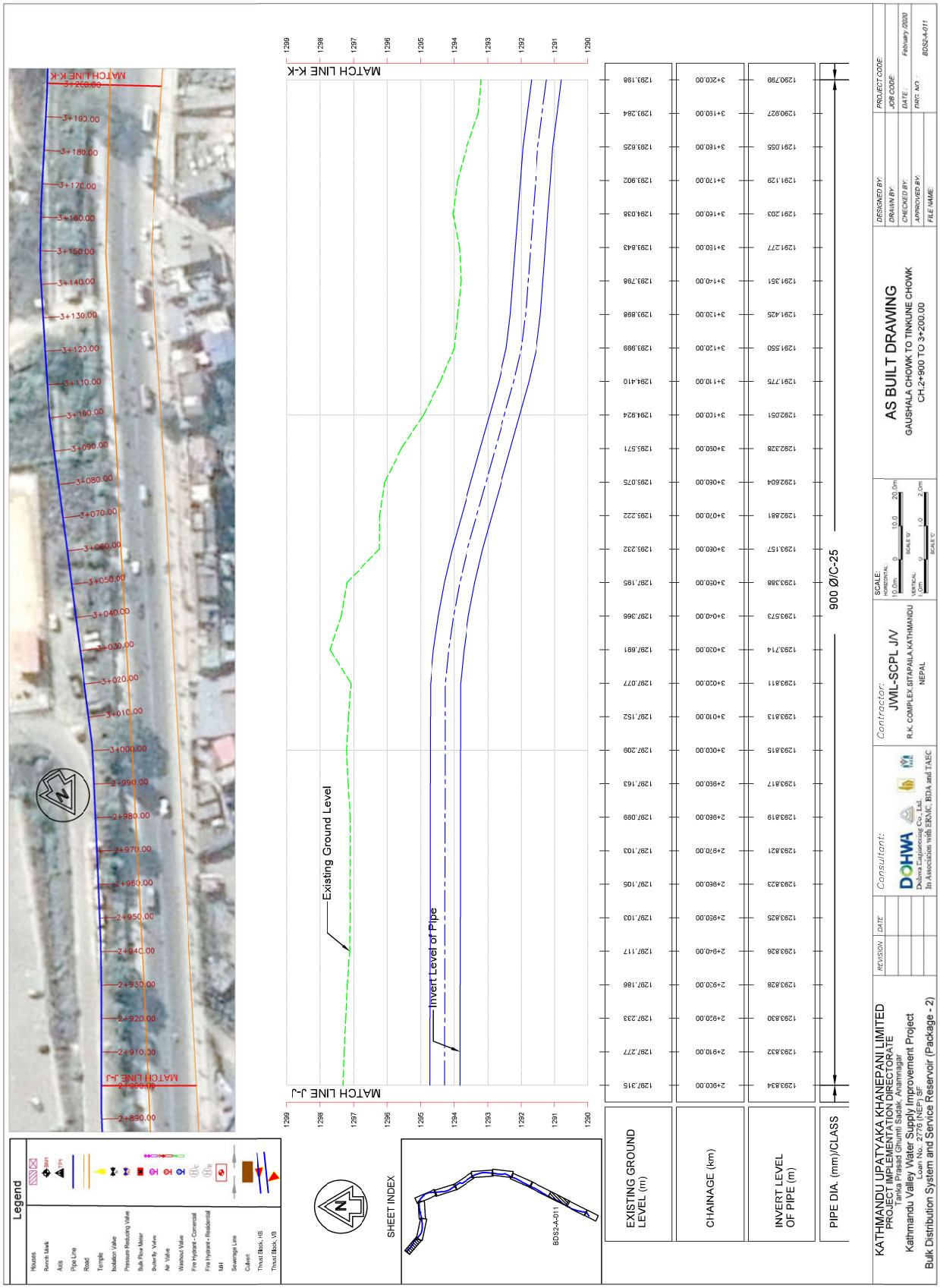

D-D
E-E
F-F(1/2)
Carriage Way
21847
Carriage Way
29900
Carriage Way
80041
Footpath
Footpath Drain
Building
EXISTING LEVEL (m)
CHAINAGE (km)

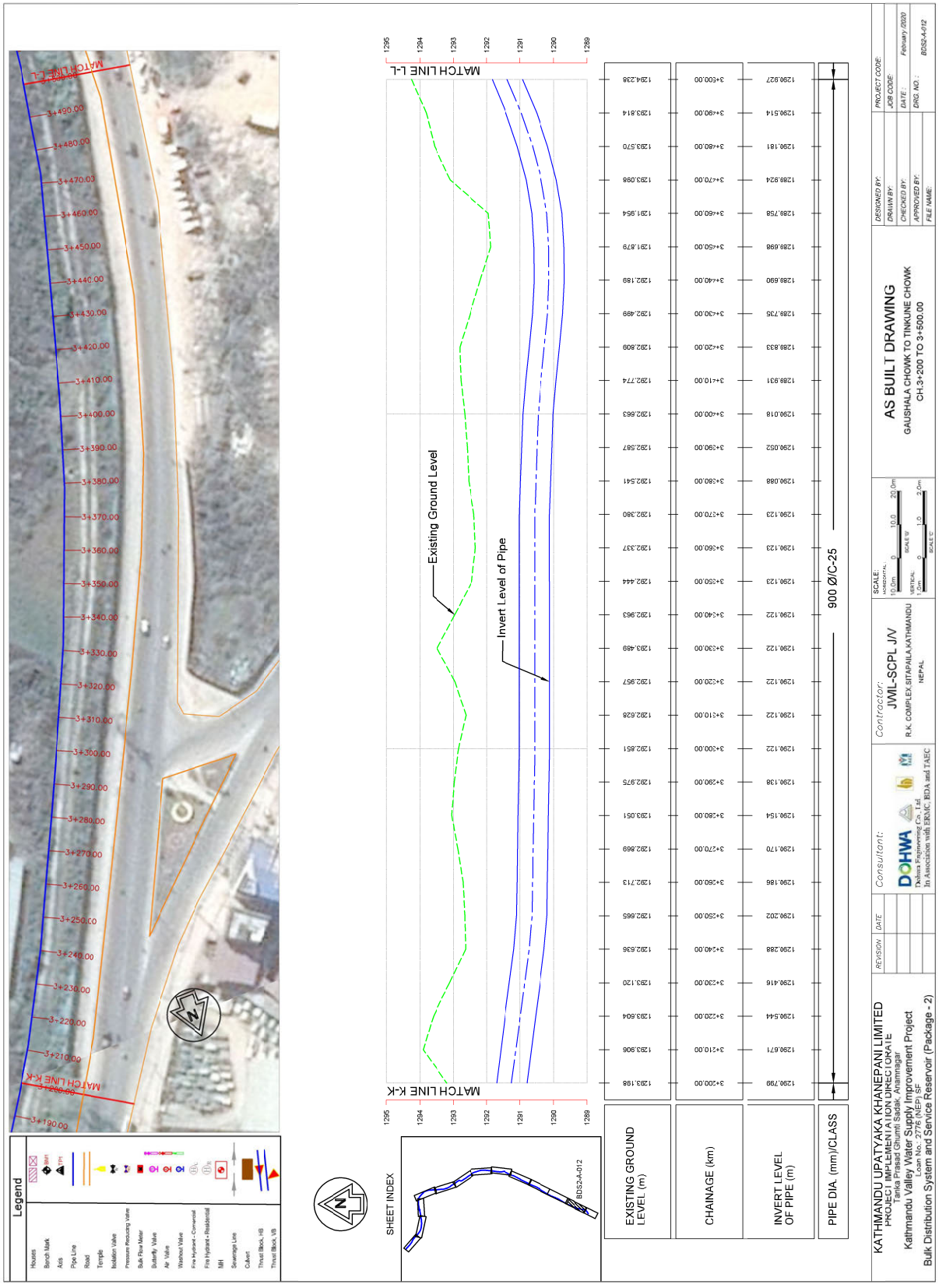
F-F(2/2)


89600
Carriage Way
80041
2652
EXISTING LEVEL (m)
CHAINAGE (km)

G-G


50849
Footpath
Carriage Way
10844
10256
Drain
EXISTING LEVEL (m)
CHAINAGE (km)


KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
Tanka Prasad Ghumti Sadak, Anamnagar
Kathmandu Valley Water Supply Improvement Project
Loan No. 2776 (NEP) SF
Bulk Distribution System and Service Reservoir (Package - 2)
Consultant:
DOHWA
Dohwa Engineering Co., Ltd.
In Association with ERMC, BDA and TAEC
Contractor:
JWL-SCPL JV
R.K. COMPLEX SITAPAILA,KATHMANDU
NEPAL
AS BUILT DRAWING
GAUSHALA CHOWK TO TINKUNE CHOWK
CH.2+900 TO 3+200.00
Legend
Houses
Bench Mark
Axis
Pipe Line
Road
Temple
Isolation Valve
Pressure Reducing Valve
Bulk Flow Meter
Butterfly Valve
Air Valve
Washout Valve
Fire Hydrant - Comercial
Fire Hydrant - Residential
MH
Sewerage Line
Culvert
Thrust Block, HB
Thrust Block, VB
MATCH LINE K-K
MATCH LINE J-J
Existing Ground Level
Invert Level of Pipe
SHEET INDEX
BDS2-A-011
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
900 Ø/C-25


AS BUILT DRAWING
GAUSHALA CHOWK TO TINKUNE CHOWK
CH:3+200 TO 3+500.00
KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
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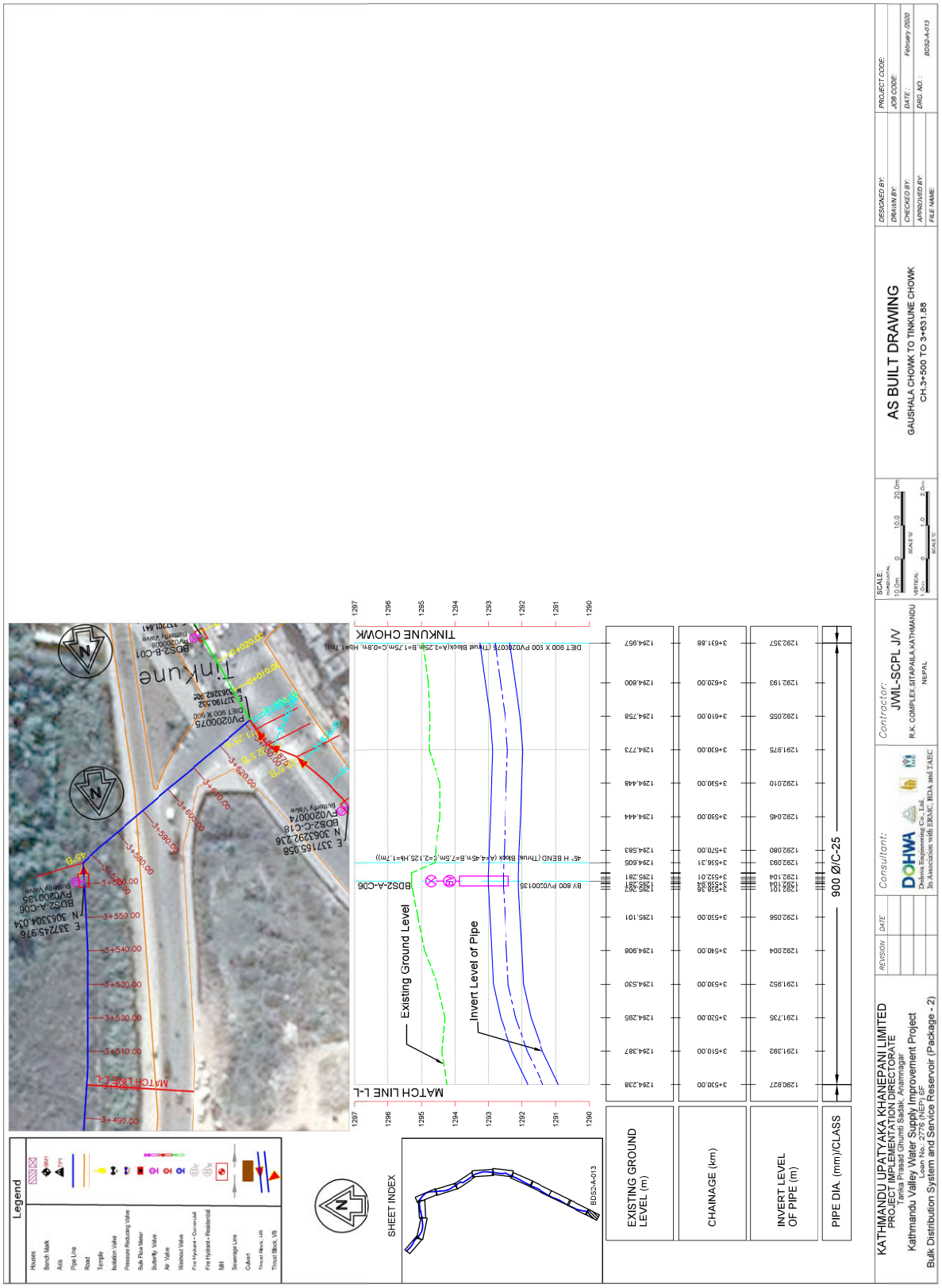
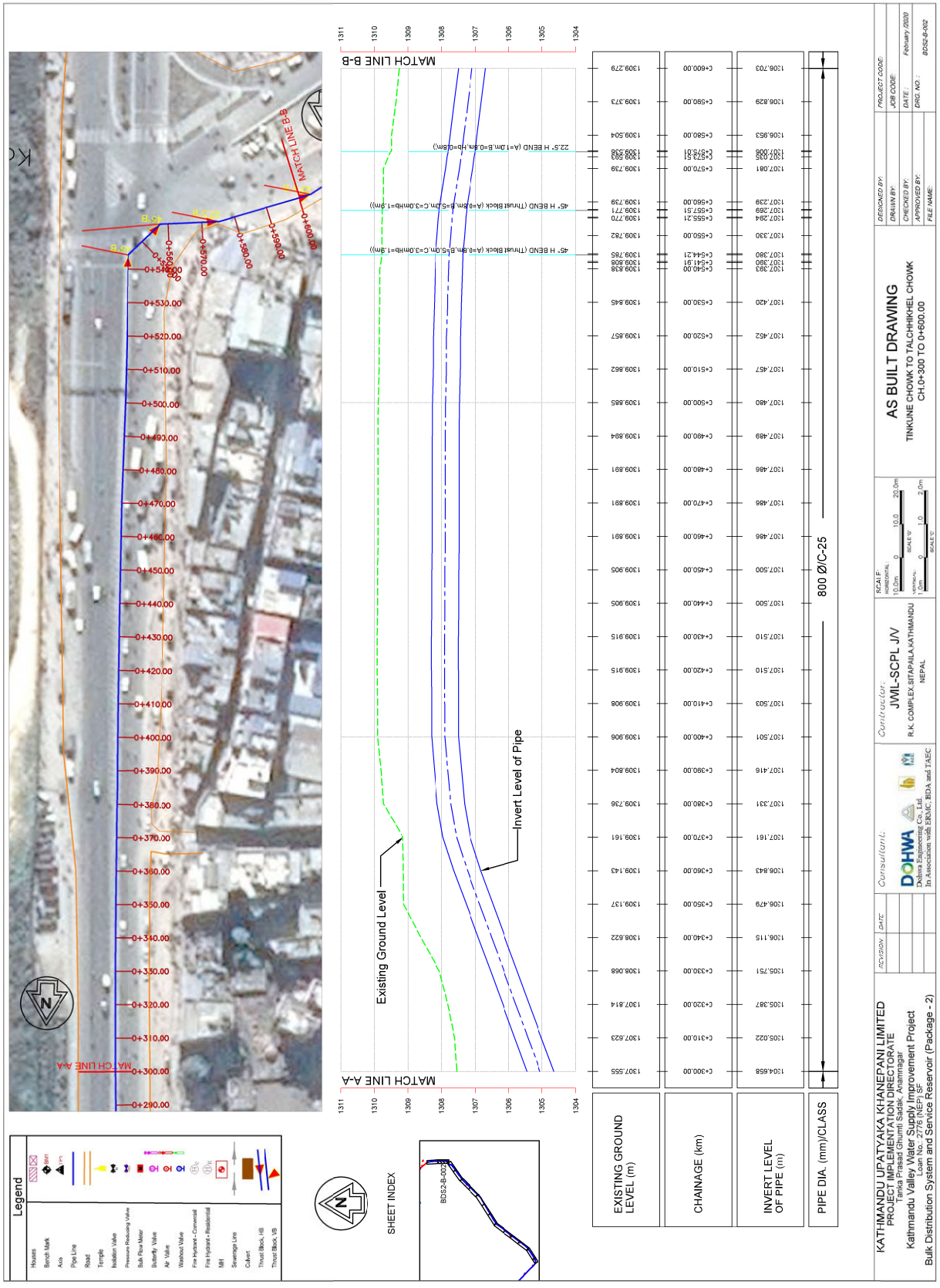
NEPAL
Legend
Houses
Bench Mark
Axis
Pipe Line
Road
Temple
Isolation Valve
Pressure Reducing Valve
Bulk Flow Meter
Butterfly Valve
Air Valve
Washout Valve
Fire Hydrant - Commercial
Fire Hydrant - Residential
MH
Sewerage Line
Culvert
Thrust Block, HB
Thrust Block, VB
MATCH LINE L-L
MATCH LINE K-K
Existing Ground Level
Invert Level of Pipe
SHEET INDEX
BDS2-A-012
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
900 Ø/C-25
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
FILE NAME:
PROJECT CODE:
JOB CODE:
DATE: February 2020
DRG. NO.: BDS2-A-012


KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
Tanka Prasad Ghumti Sadak, Anamnagar
Kathmandu Valley Water Supply Improvement Project
Loan No.: 2776 (NEP) SF
Bulk Distribution System and Service Reservoir (Package - 2)
REVISION
DATE
Consultant:
DOHWA
Dohwa Engineering Co., Ltd.
In Association with ERCSC, BIDA and TAEC
Contractor:
JWL-SCPL J/V
R.K. COMPLEX,SITAPAILA,KATHMANDU
NEPAL
SCALE:
HORIZONTAL
VERTICAL
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
FILE NAME:
PROJECT CODE:
JOB CODE:
DATE:
February /2020
DRG. NO.:
BDS2-A-013
AS BUILT DRAWING
GAUSHALA CHOWK TO TINKUNE CHOWK
CH.3+500 TO 3+831.88
Legend
Houses
Bench Mark
Axis
Pipe Line
Road
Temple
Isolation Valve
Pressure Reducing Valve
Bulk Flow Meter
Butterfly Valve
Air Valve
Washout Valve
Fire Hydrant – Commercial
Fire Hydrant – Residential
MH
Sewerage Line
Culvert
Thrust Block -VE
Thrust Block -VB
SHEET INDEX
BDS2-A-013
MATCH LINE L-L
TINKUNE CHOWK
Existing Ground Level
Invert Level of Pipe
BDS2-A-C06
BDS2-A-C01
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
900 Ø/C-25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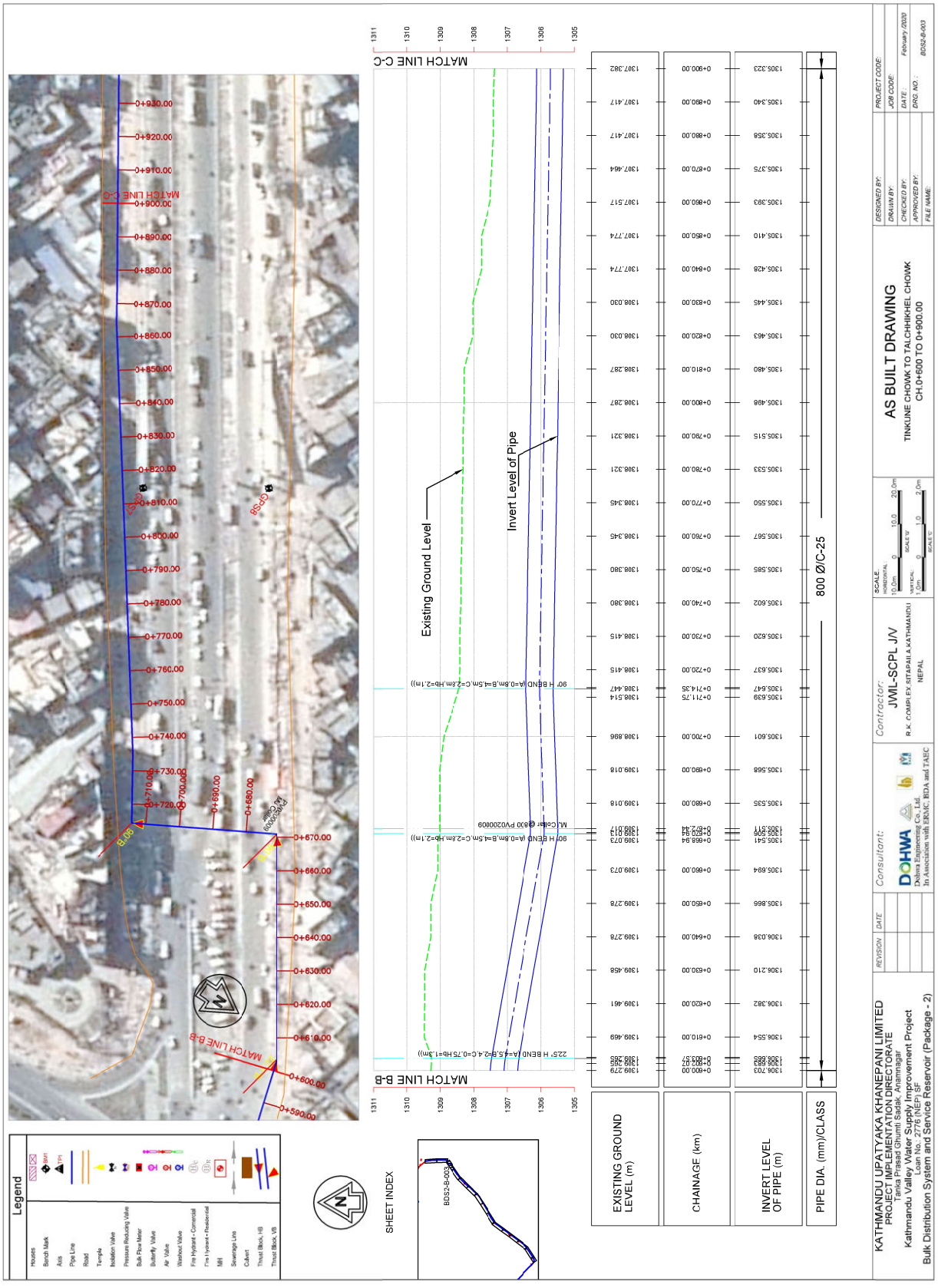
NEPAL
AS BUILT DRAWING
TINKUNE CHOWK TO TALCHHIKHEL CHOWK
CH.0+300 TO 0+600.00
MATCH LINE A-A
MATCH LINE B-B
Existing Ground Level
Invert Level of Pipe
800 Ø/C-25
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
SHEET INDEX
Legend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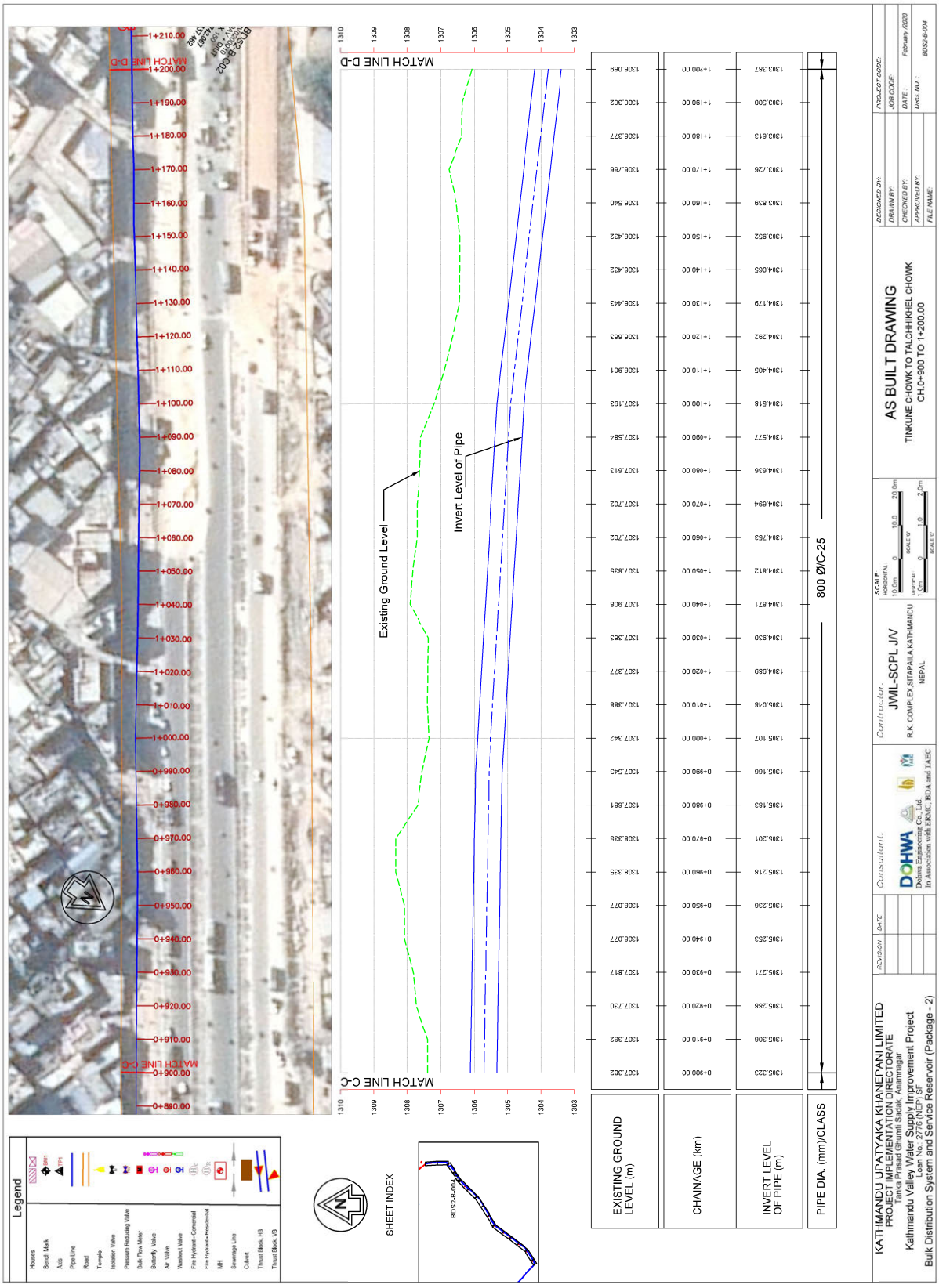
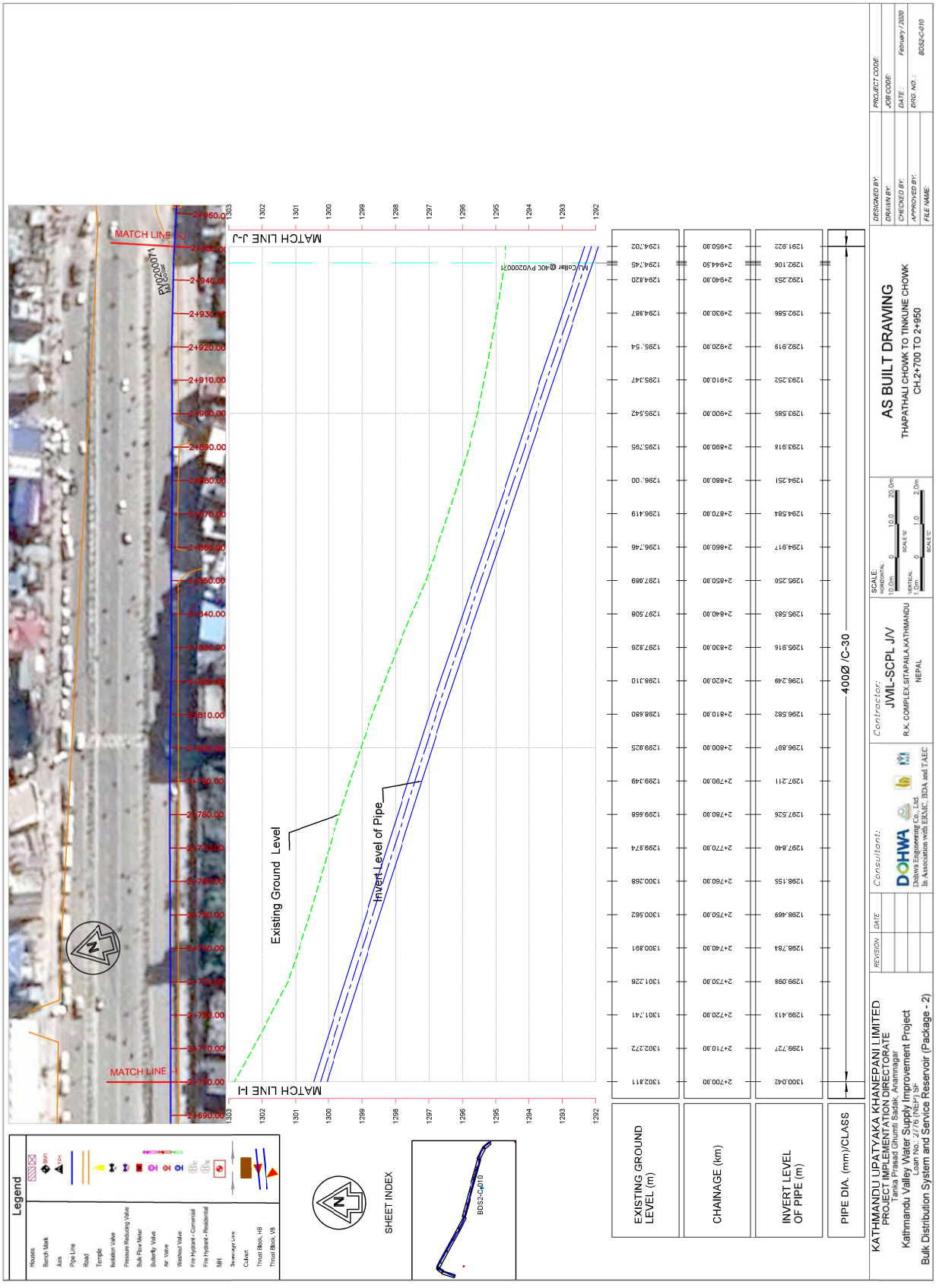
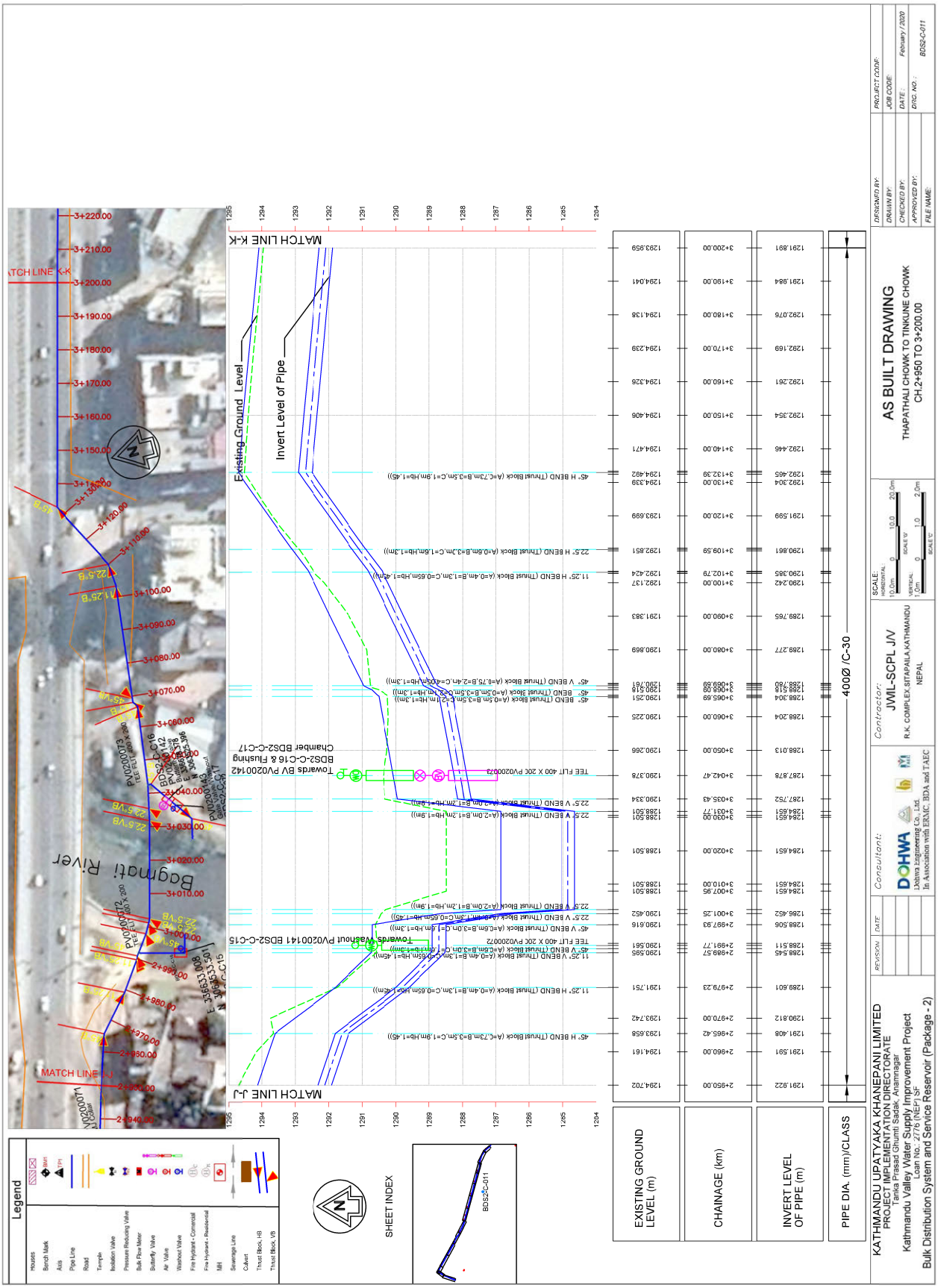
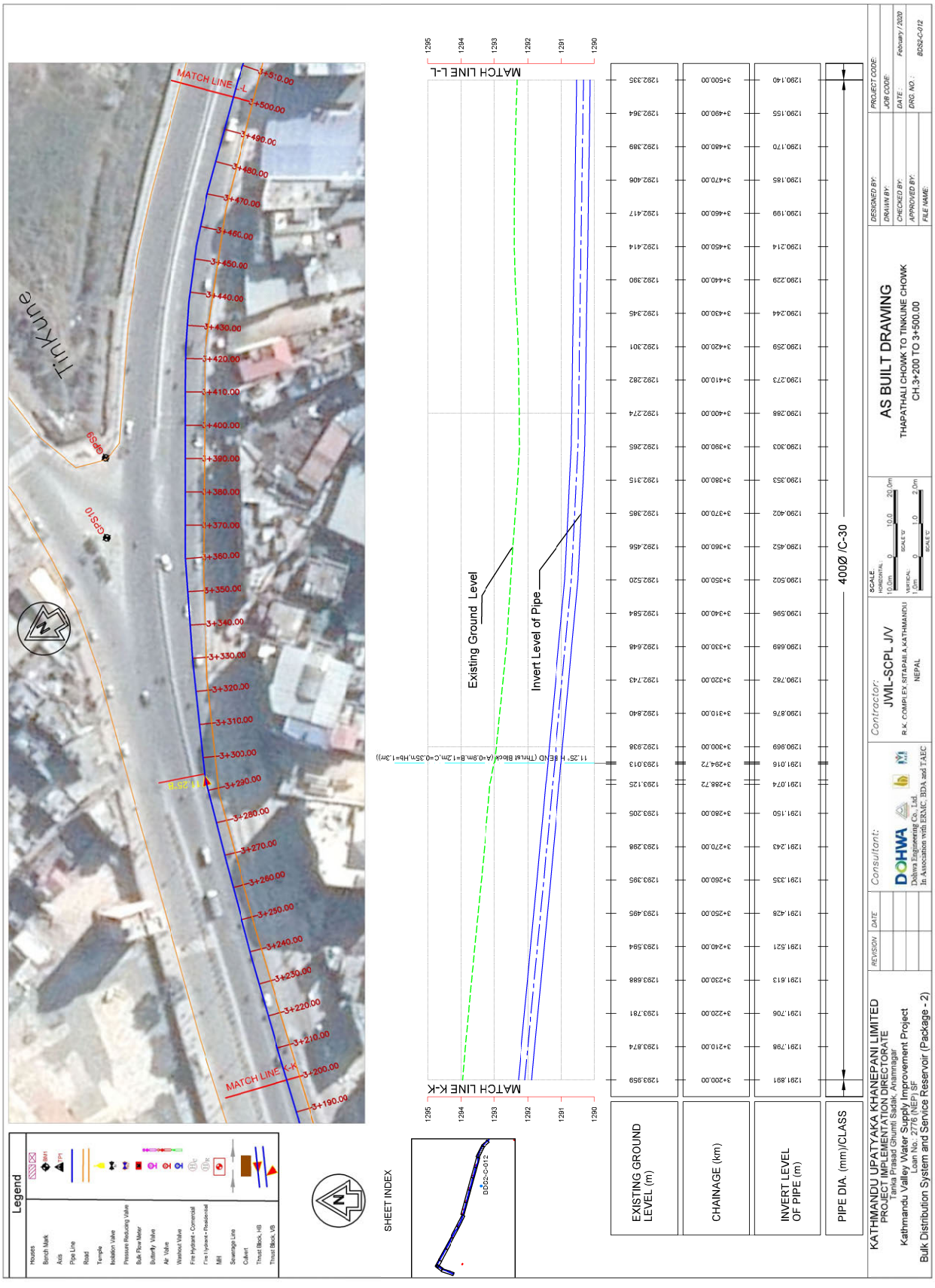
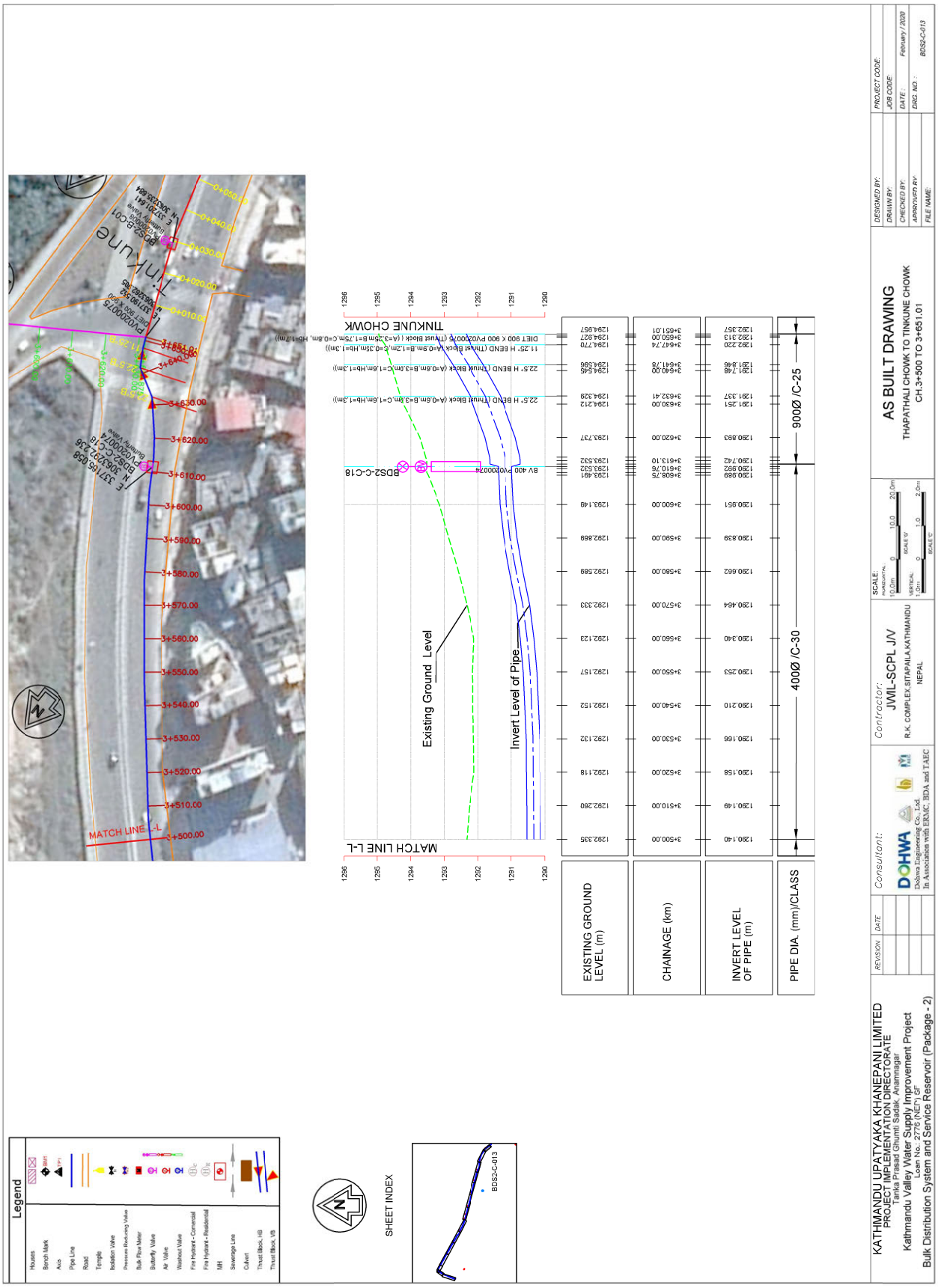
NEPAL
AS BUILT DRAWING
TINKUNE CHOWK TO TALCHHIKHEL CHOWK
CH.0+600 TO 0+900.00
Legend
SHEET INDEX
MATCH LINE C-C
MATCH LINE B-B
Existing Ground Level
Invert Level of Pipe
800 Ø/C-25
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS


AS BUILT DRAWING
TINKUNE CHOWK TO TALCHHIKHEL CHOWK
CH.0+900 TO 1+200.00
KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
Kathmandu Valley Water Supply Improvement Project
Bulk Distribution System and Service Reservoir (Package - 2)
Consultant:
DOHWA
Contractor:
JWL-SCPL J/V
R.K. COMPLEX,SITAPAILA,KATHMANDU
NEPAL
Legend
SHEET INDEX
Existing Ground Level
Invert Level of Pipe
MATCH LINE C-C
MATCH LINE D-D
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
800 Ø/C-25


MATCH LINE - J
MATCH LINE
MATCH LINE J-J
MATCH LINE I-I
Existing Ground Level
Invert Level of Pipe
Legend
SHEET INDEX
BDS2-C-010
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
400Ø /C-30
AS BUILT DRAWING
THAPATHALI CHOWK TO TINKUNE CHOWK
CH.2+700 TO 2+950
KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
Tanka Prasad Ghumti Sadak, Anamnagar
Kathmandu Valley Water Supply Improvement Project
Loan No.: 2176 [NEP] SF
Bulk Distribution System and Service Reservoir (Package - 2)
Consultant:
DOHWA
Dohwa Engineering Co., Ltd.
In Association with ERMC, BDA and TAEC
Contractor:
JWL-SCPL J/V
R.K. COMPLEX,SITAPAILA,KATHMANDU
NEPAL
PROJECT CODE:
JOB CODE:
DATE: February / 2020
DRG. NO.: BDS2-C-010
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
FILE NAME:


KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
Tanka Prasad Ghumti Sadak, Anamnagar
Kathmandu Valley Water Supply Improvement Project
Loan No.: 2776 (NEP) SF
Bulk Distribution System and Service Reservoir (Package - 2)
AS BUILT DRAWING
THAPATHALI CHOWK TO TINKUNE CHOWK
CH.2+950 TO 3+200.00
Consultant:
DOHWA
Dohwa Engineering Co., Ltd.
In Association with ERMC, BDA and TAEC
Contractor:
JWL-SCPL J/V
R.K. COMPLEX,SITAPAILA,KATHMANDU
NEPAL
Legend
SHEET INDEX
BDS2-C-011
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
400Ø /C-30
MATCH LINE K-K
MATCH LINE J-J
Existing Ground Level
Invert Level of Pipe
Towards BV PV0200142 BDS2-C-C16 & Flushing Chamber BDS2-C-C17
Towards Washout PV0200141 BDS2-C-C15
Bagmati River


KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
Kathmandu Valley Water Supply Improvement Project
Bulk Distribution System and Service Reservoir (Package - 2)
Consultant:
DOHWA
Dohwa Engineering Co., Ltd.
In Association with ERMC, BDA and TAEC
Contractor:
JWL-SCPL J/V
R.K. COMPLEX, SITAPAIL A.KATHMANDU
NEPAL
AS BUILT DRAWING
THAPATHALI CHOWK TO TINKUNE CHOWK
CH.3+200 TO 3+500.00
Legend
Houses
Bench Mark
Axis
Pipe Line
Road
Temple
Isolation Valve
Pressure Reducing Valve
Bulk Flow Meter
Butterfly Valve
Air Valve
Washout Valve
Fire Hydrant - Commercial
Fire Hydrant - Residential
MH
Sewerage Line
Culvert
Thrust Block, HB
Thrust Block, VB
MATCH LINE L-L
MATCH LINE K-K
Tinkune
Existing Ground Level
Invert Level of Pipe
SHEET INDEX
BDS2-C-012
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
400Ø /C-30


KATHMANDU UPATYAKA KHANEPANI LIMITED
PROJECT IMPLEMENTATION DIRECTORATE
Tanka Prasad Ghumti Sadak, Anamnagar
Kathmandu Valley Water Supply Improvement Project
Loan No. 2776 (NEP) SF
Bulk Distribution System and Service Reservoir (Package - 2)
REVISION
DATE
Consultant:
DOHWA
Dohwa Engineering Co., Ltd.
In Association with ERMC, BDA and TAEC
Contractor:
JWL-SCPL J/V
R.K. COMPLEX, SITAPAILA,KATHMANDU
NEPAL
SCALE:
HORIZONTAL:
VERTICAL:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
FILE NAME:
PROJECT CODE:
JOB CODE:
DATE:
February / 2020
DRG. NO. :
BDS2-C-013
AS BUILT DRAWING
THAPATHALI CHOWK TO TINKUNE CHOWK
CH.3+500 TO 3+651.01
Legend
Houses
Bench Mark
Axis
Pipe Line
Road
Temple
Isolation Valve
Pressure Reducing Valve
Bulk Flow Meter
Butterfly Valve
Air Valve
Washout Valve
Fire Hydrant - Comercial
Fire Hydrant - Residential
MH
Sewerage Line
Culvert
Thrust Block, HB
Thrust Block, VB
SHEET INDEX
BDS2-C-013
TINKUNE
TINKUNE CHOWK
MATCH LINE L-L
Existing Ground Level
Invert Level of Pipe
BDS2-C-C18
BV 400 PV02000Z4
DIET 900 x 900 PV02000Z6 (Thrust Block ((A=3.25m,B=1.75m,C=0.6m, H=1.7m))
11.25° H BEND (Thrust Block (A=0.9m,B=1.2m,C=0.35m,H=1.3m))
22.5° H BEND (Thrust Block (A=0.5m,B=3.0m,C=1.6m,H=1.3m))
22.5° H BEND (Thrust Block (A=0.5m,B=3.3m,C=1.6m,H=1.3m))
EXISTING GROUND LEVEL (m)
CHAINAGE (km)
INVERT LEVEL OF PIPE (m)
PIPE DIA. (mm)/CLASS
900Ø /C-25
400Ø /C-30

付録 3. 柱状図

Drilling Log

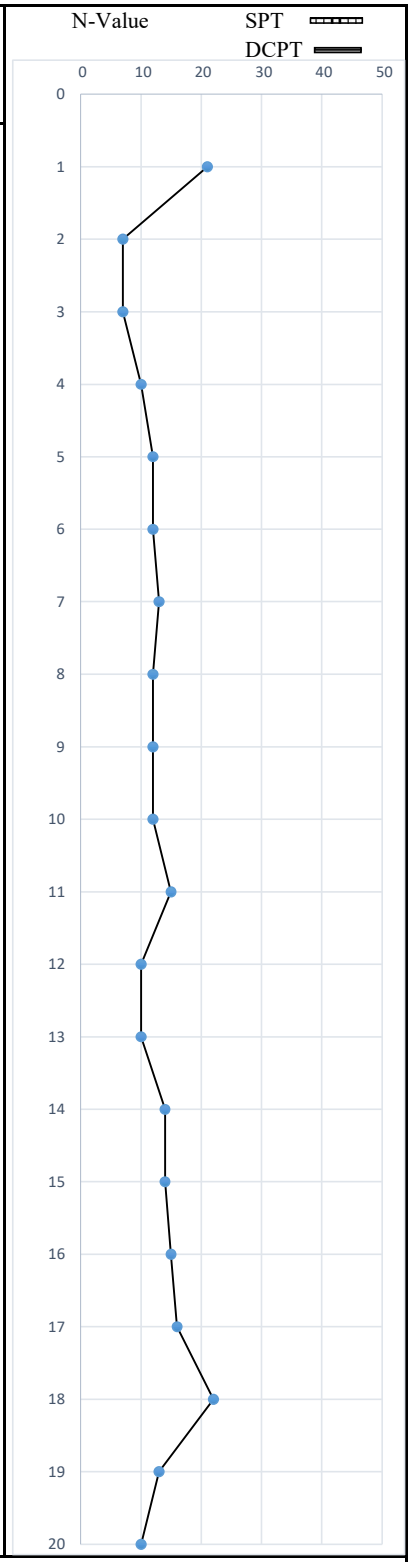
Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI — Hole Location: Tinkune

Location: Tinkune (BH#01) — Start Date: 08-29-2022 — End Date: 04-09-2022

Identification: BH#01 Tinkune Junction — **Coordinates: 337126.866, 3063376.827** — Ground water: 3.9m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blow 15 cm	15 cm	15 cm	N-Value
Top filling soil (Bricks, organic traces, concrete, gravel		- 1	SPT	19	9	12	21
		- 2	SPT	3	4	3	7
Loose medium sized, grey medium sand with traces of silt		- 3	SPT	2	3	4	7
		- 4	SPT	4	5	5	10
		- 5	SPT	4	6	6	12
Medium to coarse grey medium dense sand with traces of silt		- 6	SPT	3	4	8	12
		- 7	SPT	2	6	7	13
Blackish grey soft low plastic clayey silt with micaceous fine sand.		- 8	SPT	4	5	7	12
		- 9	SPT	2	5	7	12
		- 10	SPT	2	4	8	12
Blackish grey medium soft to stiff low to medium plastic clayey silt with some micaceous fine sand (micaceous especially at 13.0m depth).		- 11	SPT	2	7	8	15
		- 12	SPT	2	4	6	10
		- 13	SPT	4	4	6	10
		- 14	SPT	3	5	9	14
		- 15	SPT	3	5	9	14
Blackish grey medium soft to stiff low to medium plastic clayey silt with micaceous fine sand of Patan formation. (**Patan formation** (after Yamanaka 1982): It consist fluvio-lacustrine deposit consisting of laminated arkosic sand, silt, clay and peat layers)		- 16	SPT	3	5	10	15
		- 17	SPT	3	6	10	16
		- 18	SPT	3	6	16	22
		- 19	SPT	3	6	7	13
		- 20	SPT	3	4	6	10



20+0.45m depth

Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Stiff	Stiff	Very Stiff	Hard

Drilling Log

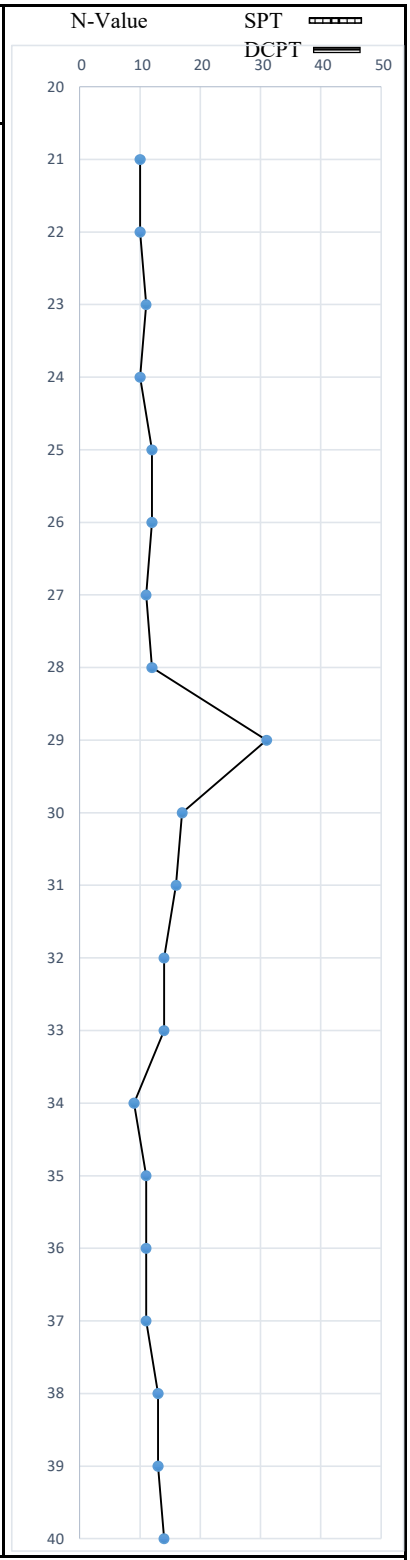
Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI — Hole Location: Tinkune

Area Location: Tinkune (BH#01) — Start Date: 08-29-2022 — End Date: 04-09-2022

Identification: BH#01 Tinkune Junction — **Coordinates: 337126.866, 3063376.827** — Ground water: 3.9m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blow 15 cm	15 cm	15 cm	N-Value
Blackish stiff medium plastic clayey silt of Patan formation.		- 21	SPT	3	4	6	10
		- 22	SPT	4	5	5	10
		- 23	SPT	4	5	6	11
		- 24	SPT	2	4	6	10
		- 25	SPT	3	6	6	12
Greyish Black stiff to very stiff medium plastic clayey silt with traces of micaceous sand of Patan formation. (Micaceous greyish fine sand around 25-26m depth)		- 26	SPT	3	5	7	12
		- 27	SPT	3	4	7	11
		- 28	SPT	2	5	7	12
		- 29	SPT	5	14	17	31
		- 30	SPT	4	8	9	17
Blackish medium soft to stiff medium plastic clayey silt of Patan Formation.		- 31	SPT	5	8	8	16
		- 32	SPT	3	7	7	14
		- 33	SPT	5	7	7	14
		- 34	SPT	3	3	6	9
		- 35	SPT	3	5	6	11
Blackish medium plastic, stiff, silty clay with traces of fine sand of Patan formation.		- 36	SPT	3	5	6	11
		- 37	SPT	2	4	7	11
		- 38	SPT	3	5	8	13
		- 39	SPT	4	6	7	13
		- 40	SPT	2	6	8	14



40+0.45m depth

Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Stiff	Stiff	Very Stiff	Hard

Drilling Log

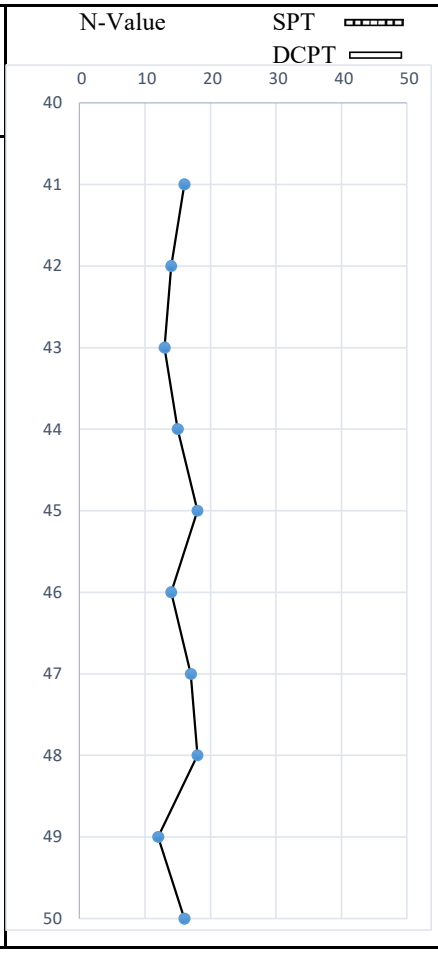
Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI — Hole Location: Tinkune

Location: Tinkune (BH#01) — Start Date: 08-29-2022 — End Date: 04-09-2022

Identification: BH#01 Tinkune Junction — **Coordinates: 337126.866, 3063376.827** — Ground water: 3.9m

Soil Description	Symbol	Depth, m	Sample No. & Type	No. of blows 15 cm	15 cm	15 cm	N-Value
Greyish black medium plastic stiff clayey silt with traces of fine sand of Patan formation.		- 41	SPT	6	8	8	16
		- 42	SPT	4	6	8	14
		- 43	SPT	4	5	8	13
		- 44	SPT	4	7	8	15
		- 45	SPT	4	8	10	18
Greyish black medium plastic stiff laminated clayey silt with micaceous some fine sand & some interbedded organic traces (termed as Patan formation)		- 46	SPT	5	6	8	14
		- 47	SPT	6	8	9	17
		- 48	SPT	7	9	9	18
		- 49	SPT	2	4	8	12
		- 50	SPT	2	6	10	16



End Depth	**Terminated at 50+0.45m depth**

Types of Soil		N Value					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Soft	Stiff	Very Stiff	Hard

SILT Consultants (P.) Ltd. KATHMANDU NEPAL

Drilling Log

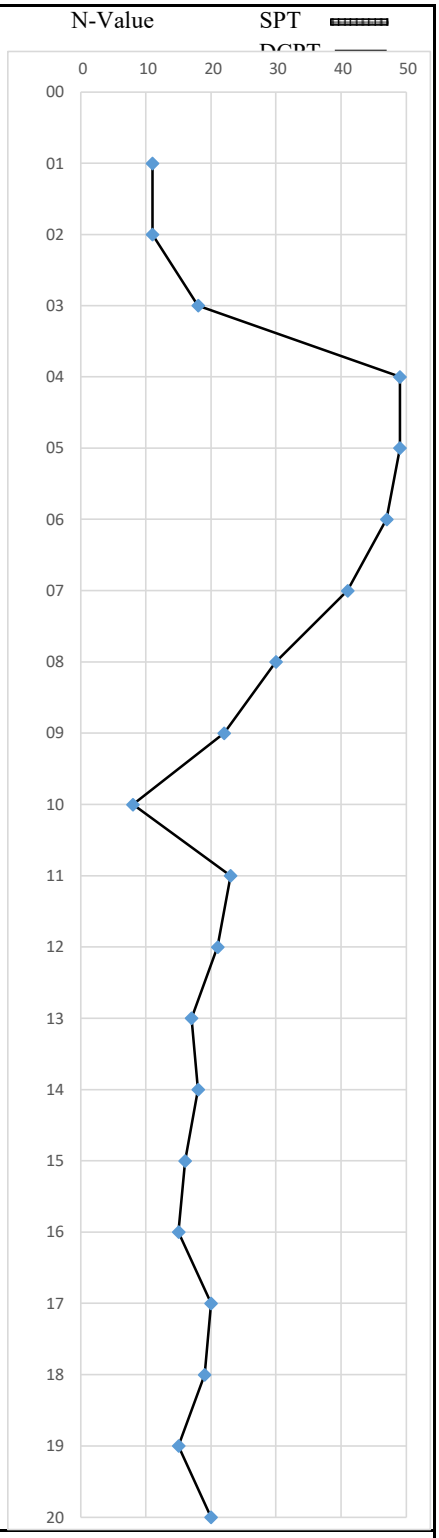
Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI — Hole Location: Tinkune

Area Location: Munibhairav (BH#02) — Start Date: 09-09-2022 — End Date: 09-14-2022

Identification: BH#2 Munibhairav — **Coordinates: 337252.6094, 3063094.546** — Ground water: 6.0m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blows 15 cm	15 cm	15 cm	N-Value
Top filling micaceous fine sand		- 1	SPT	3	5	6	11
Loose fine silty sand with clayey lumps		- 2	SPT	4	5	6	11
Medium dense grey micaceous silty sand		- 3	SPT	4	4	14	18
Soft low plastic clayey silt and fine sand		- 4	SPT	20	25	24	49
		- 5	SPT	13	23	26	49
Medium dense to dense medium to coarse sand with some silt		- 6	SPT	13	21	26	47
		- 7	SPT	5	15	26	41
		- 8	SPT	7	12	18	30
Blackish low plastic medium soft clayey silt with fine sand		- 9	SPT	8	10	12	22
Greyish dense to very dense sand with silt		- 10	SPT	2	3	5	8
		- 11	SPT	5	10	13	23
		- 12	SPT	3	9	12	21
		- 13	SPT	3	7	10	17
Blackish low plastic medium soft clayey silt with fine sand		- 14	SPT	4	8	10	18
		- 15	SPT	4	6	10	16
		- 16	SPT	4	6	9	15
Medium dense to dense medium to coarse sand with some silt		- 17	SPT	5	9	11	20
		- 18	SPT	3	8	11	19
		- 19	SPT	3	5	10	15
		- 20	SPT	5	9	11	20



20+0.45m depth

Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Soft	Stiff	Very Stiff	Hard

Drilling Log

Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

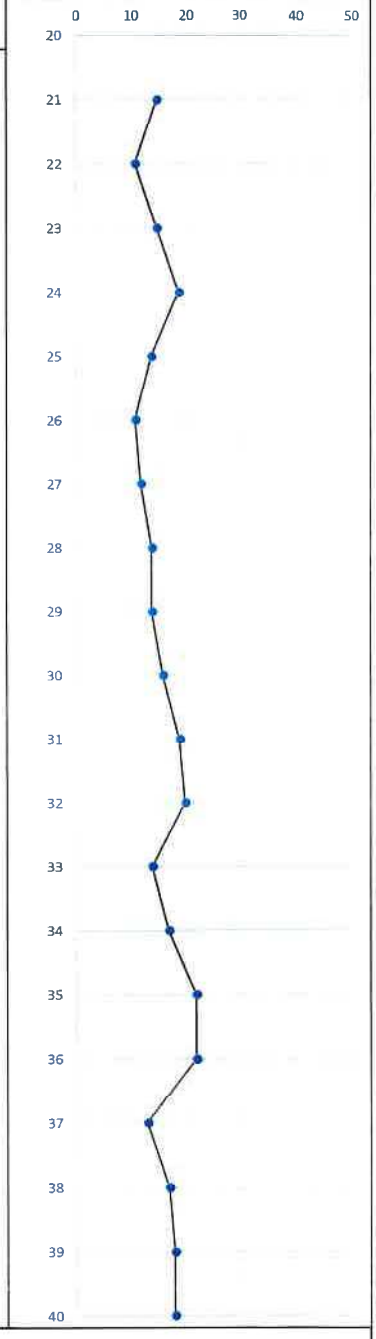
Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI
Hole Location: Tinkune

Area Location: Munibhairav (BH#02)
Start Dai Start Date:
End Date: 09-14-2022

Identification: BH#2 Munibhairav

Coordinates: 337252.6094, 3063094.546 Ground water: 6.0m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blows 15 cm	15 cm	15 cm	N-Value
Blackish low plastic medium soft clayey silt with fine sand		- 21	SPT	4	7	8	15
		- 22	SPT	3	5	6	11
		- 23	SPT	6	7	8	15
		- 24	SPT	6	8	11	19
		- 25	SPT	6	7	7	14
		- 26	SPT	4	5	6	11
Medium dense to dense medium to coarse sand		- 27	SPT	3	5	7	12
		- 28	SPT	6	7	7	14
Blackish low to medium plastic, laminated layers of clayey silt with traces of fine sand (**Patan formation** (after Yamanaka 1982): It consist fluvio-lacustrine deposit consisting of laminated arkosic sand, silt, clay and peat layers)		- 29	SPT	5	6	8	14
		- 30	SPT	4	7	9	16
		- 31	SPT	6	9	10	19
		- 32	SPT	6	10	10	20
		- 33	SPT	6	6	8	14
		- 34	SPT	4	8	9	17
		- 35	SPT	9	11	11	22
		- 36	SPT	8	10	12	22
		- 37	SPT	5	6	7	13
		- 38	SPT	6	8	9	17
		- 39	SPT	4	7	11	18
		- 40	SPT	5	7	11	18



40+0.45m depth

Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4** Very Loose	**4 to 10** Loose	**10 to 30** Med. Dense	**30 to 50** Dense	**> 50** Very Dense	
Cohesive Soil	Consistency	**0 to 2** Very Soft	**2 to 4** Soft	**4 to 8** Med. Soft	**8 to 16** Stiff	**16 to 32** Very Stiff	**> 32** Hard

SILT Consultants (P.) Ltd. KATHMANDU NEPAL

Drilling Log

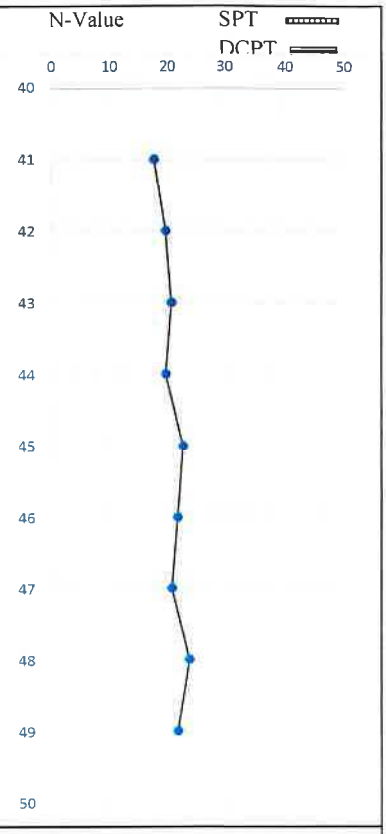
Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI
Location: Munibhairav (BH#02)
Identification: BH#02 Munibhairav

Start Date: 09-09-2022
Coordinates:

Hole Location: Tinkune
End Date: 09-14-2022
Ground water: 6.0m

Soil Description	Symbol	Depth, m	Sample No &Type	No. of blows 15 cm	15 cm	15 cm	N-Value
Blackish low plastic stiff clayey silt with fine sand of Patan Formation		- 41	SPT	5	8	10	18
		- 42	SPT	4	8	12	20
		- 43	SPT	9	10	11	21
		- 44	SPT	8	10	10	20
		- 45	SPT	10	11	12	23
		- 46	SPT	10	10	12	22
		- 47	SPT	4	10	11	21
		- 48	SPT	6	11	13	24
		- 49	SPT	5	10	12	22
		- 50					



End Depth		**50+0.45m depth**					
Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Soft	Stiff	Very Stiff	Hard

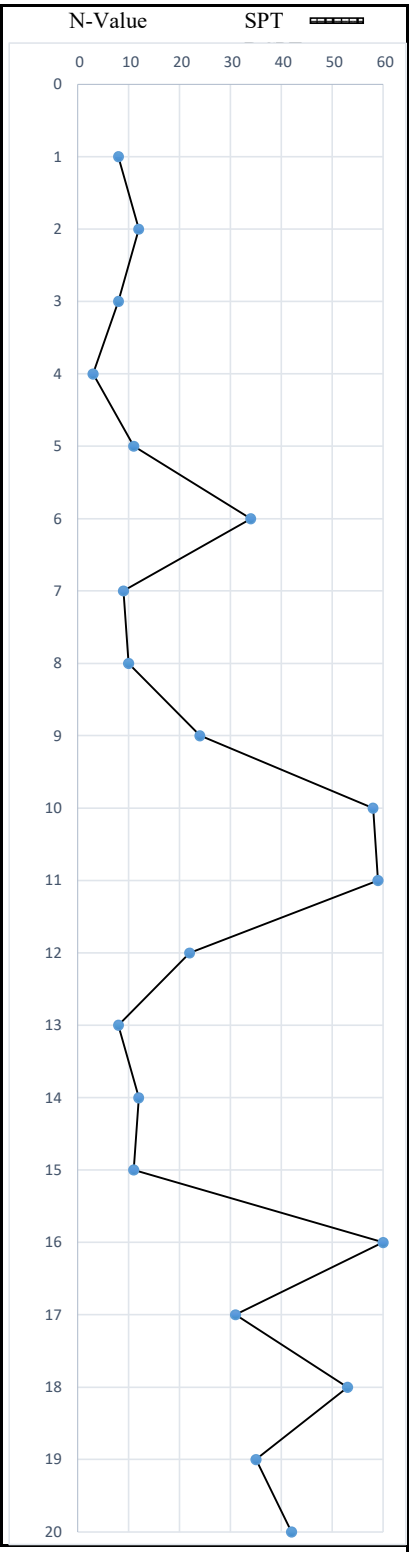
SILT Consultants (P.) Ltd. KATHMANDU NEPAL

Drilling Log

Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI — Hole Location: Tinkune
Location: Koteshwor (BH#03) — Start Date: 09-08-2022 — End Date: 09-15-2022
Identification: BH#01 Koteshwor Junction — **Coordinates: 337264.0533, 3062580.872** — Ground water: 12.0m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blow 15 cm	15 cm	15 cm	N-Value
Greyish, top filing micaceous silty sand		- 1	SPT	3	3	5	8
Brownish medium dense silty fine sand		- 2	SPT	3	7	5	12
Low plastic medium soft clayey silt with fine sand		- 3	SPT	3	5	3	8
Medium dense silty medium sand		- 4	SPT	1	1	2	3
Medium dense, blackish silty fine sand		- 5	SPT	3	5	6	11
Medium dense to dense clean medium to coarse sand with some fine		- 6	SPT	5	15	19	34
		- 7	SPT	3	4	5	9
		- 8	SPT	3	4	6	10
Greyish to blackish silty sand		- 9	SPT	5	7	17	24
Low plastic blackish, blackish stiff clayey silt		- 10	SPT	7	24	34	58
Blackish low plastic, clayey silt with some sand		- 11	SPT	8	23	36	59
Blackish medium dense micaceous silt silt with clayey lumps and fine sand		- 12	SPT	9	11	11	22
		- 13	SPT	3	3	5	8
		- 14	SPT	4	6	6	12
		- 15	SPT	2	3	8	11
		- 16	SPT	16	24	36	60
		- 17	SPT	9	19	12	31
		- 18	SPT	8	22	31	53
		- 19	SPT	3	10	25	35
		- 20	SPT	3	29	13	42



20+0.45m depth

Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Soft	Stiff	Very Stiff	Hard

Drilling Log

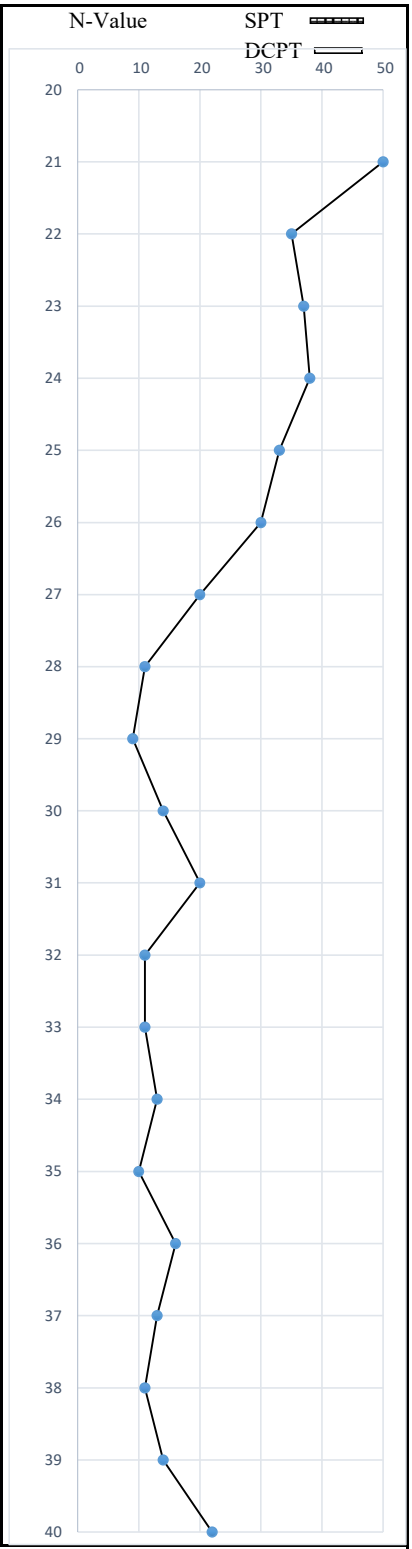
Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI Hole Location: Tinkune

Area Location: Koteshwor (BH#03) Start Date: 09-08-2022 End Date: 09-15-2022

Identification: BH#03 Koteshwor Junction Coordinates Ground water: 12.0m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blow 15 cm	15 cm	15 cm	N-Value
Blackish low to medium plastic stiff clayey silt with traces of fine sand and interbedded thin layers of organic traces deposits (**Patan formation** (after Yamanaka 1982): It consist fluvio-lacustrine deposit consisting of laminated arkosic sand, silt, clay and peat layers)		- 21	SPT	3	16	34	50
		- 22	SPT	3	16	19	35
		- 23	SPT	10	16	21	37
		- 24	SPT	4	16	22	38
		- 25	SPT	10	15	18	33
		- 26	SPT	4	10	20	30
		- 27	SPT	4	7	13	20
		- 28	SPT	4	5	6	11
		- 29	SPT	4	4	5	9
		- 30	SPT	4	7	7	14
		- 31	SPT	6	9	11	20
		- 32	SPT	4	5	6	11
		- 33	SPT	3	5	6	11
		- 34	SPT	4	5	8	13
		- 35	SPT	4	4	6	10
		- 36	SPT	6	7	9	16
		- 37	SPT	4	6	7	13
		- 38	SPT	6	5	6	11
		- 39	SPT	6	7	7	14
		- 40	SPT	5	10	12	22



40+0.45m depth

Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Soft	Stiff	Very Stiff	Hard

Drilling Log

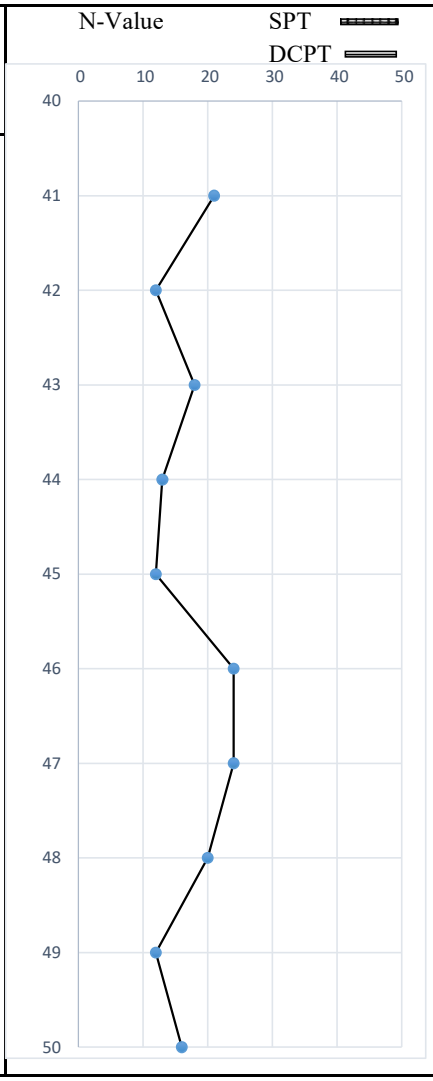
Project: Geotechnical Investigation for Preparatory Survey on the Project for Intersection Improvement Project in Kathmandu (Koteshwor – Tinkune)

Client: Joint Venture of Oriental Consultants Global Co. Ltd. ,PADECO Co. Ltd. and CTI | Hole Location: Tinkune

Location: Koteshwor (BH#03) | Start Date: 09-08-2022 | End Date: 09-15-2022

Identification: BH#03 Koteshwor Junction | **Coordinates: 337264.0533, 3062580.872** | Ground water: 12.0m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blows 15 cm	15 cm	15 cm	N-Value
Blackish low to medium plastic stiff clayey silt with traces of fine sand and interbedded thin layers of organic traces deposits (**Patan Formation**)		- 41	SPT	7	10	11	21
		- 42	SPT	7	6	6	12
		- 43	SPT	8	8	10	18
		- 44	SPT	6	6	7	13
		- 45	SPT	5	6	6	12
		- 46	SPT	6	12	12	24
		- 47	SPT	8	11	13	24
		- 48	SPT	9	10	10	20
		- 49	SPT	5	4	8	12
		- 50	SPT	4	6	10	16



End Depth		**50+0.45m depth**					
Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Soft	Stiff	Very Stiff	Hard

SILT Consultants (P.) Ltd. KATHMANDU NEPAL

Drilling Log

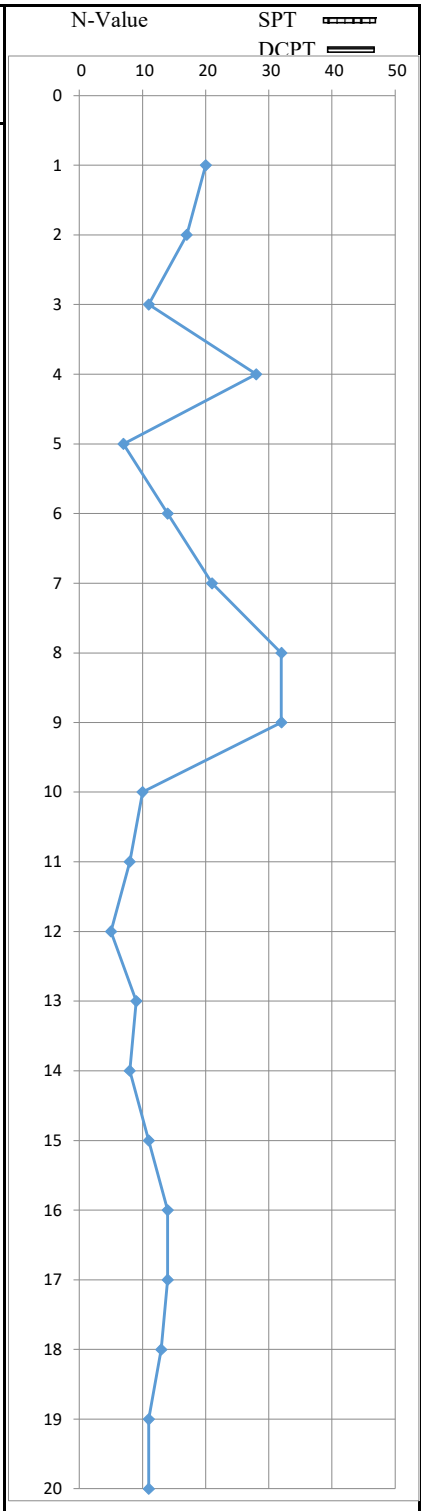
Project: Geotechnical Investigation for the Preparatory Survey on the Project for Intersection Improvement in Kathmandu

Client: Oriental Consultants Global Co., Ltd. JV with PADECO Co., Ltd. and CTI Engineering International Co., Ltd.

Location: Jadibuti | Start Date: 08/30/2022 | Hole Location: BH-4

Identification: BH_4 Jadibuti Junction | **Coordinates: 337572.7437, 3062325.214** | End Date: 09/06/2022 | Ground Water: 6.0m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blow 15 cm	15 cm	15 cm	N-Value
Top residual followed by filling material (rocks fragments, boulder to bricks)		- 1	SPT	7	8	12	20
(Dense) clean medium to coarse sand with traces of silt.		- 2	SPT	10	6	11	17
		- 3	SPT	3	2	9	11
		- 4	SPT	13	15	13	28
		- 5	SPT	14	4	10	7
(Dense) sandy soil with traces of cobbles and silt.		- 6	SPT	5	4	10	14
Dense, greyish medium to coarse sand with some silt.		- 7	SPT	13	11	20	21
		- 8	SPT	5	14	18	32
		- 9	SPT	11	15	17	32
		- 10	SPT	7	3	7	10
Blackish grey low plastic clayey silt with traces of fine sand. (**Patan formation** (after Yamanaka 1982): It consist fluvio-lacustrine deposit consisting of laminated arkosic sand, silt, clay and peat layers)		- 11	SPT	2	3	5	8
		- 12	SPT	3	2	3	5
		- 13	SPT	2	3	6	9
		- 14	SPT	4	4	4	8
		- 15	SPT	4	5	6	11
Blackish grey low plastic clayey silt with some fine sand. (Patan Formation)		- 16	SPT	4	7	7	14
		- 17	SPT	4	7	7	14
		- 18	SPT	4	6	7	13
		- 19	SPT	2	4	7	11
		- 20	SPT	4	5	6	11



*** Completed at 20+0.45m depth**

Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Stiff	Stiff	Very Stiff	Hard

Drilling Log

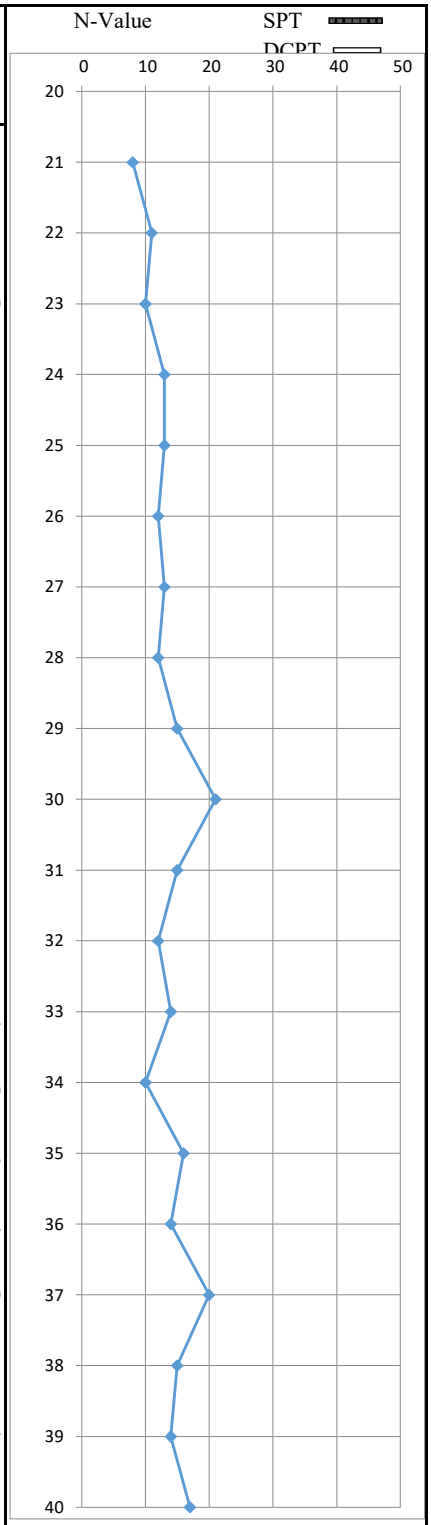
Project: Geotechnical Investigation for the Preparatory Survey on the Project for Intersection Improvement in Kathmandu

Client: Oriental Consultants Global Co., Ltd. JV with PADECO Co., Ltd. and CTI Engineering International Co., Ltd.

Location: Jadibuti | Start Date: 08/30/2022 | Hole Location: BH-4

Identification: BH_4 Jadibuti Junction | **Coordinates: 337572.7437, 3062325.214** | End Date: 09/06/2022 | Ground Water: 6.0m

Soil Description	Symbol	Depth, m	Sample No. &Type	No. of blow 15 cm	15 cm	15 cm	N-Value
Blackish grey low plastic stiff clayey silt with traces of fine sand. (Patan Formation)		- 21	SPT	3	4	4	8
		- 22	SPT	3	4	7	11
		- 23	SPT	3	4	6	10
		- 24	SPT	3	5	8	13
		- 25	SPT	4	5	8	13
Blackish grey to blackish low plastic stiff to very stiff clayey silt with traces of fine sand. (Patan Formation)		- 26	SPT	3	5	7	12
		- 27	SPT	3	6	7	13
		- 28	SPT	3	5	7	12
		- 29	SPT	8	7	8	15
		- 30	SPT	8	10	11	21
Blackish grey low plastic stiff clayey silt with traces of fine sand. (Patan Formation)		- 31	SPT	5	7	8	15
		- 32	SPT	4	6	6	12
		- 33	SPT	6	7	7	14
		- 34	SPT	5	6	4	10
		- 35	SPT	7	9	7	16
Blackish grey low to medium plastic, stiff to very stiff clayey silt with traces of fine sand. (Patan Formation)		- 36	SPT	5	6	8	14
		- 37	SPT	5	10	10	20
		- 38	SPT	6	8	7	15
		- 39	SPT	4	6	8	14
		- 40	SPT	3	7	10	17



*** Completed at 40+0.45m depth**

Types of Soil		N Value					
Granular Soil	Compactness	0 to 4	4 to 10	10 to 30	30 to 50	> 50	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	0 to 2	2 to 4	4 to 8	8 to 16	16 to 32	> 32
		Very Soft	Soft	Med. Stiff	Stiff	Very Stiff	Hard

Drilling Log

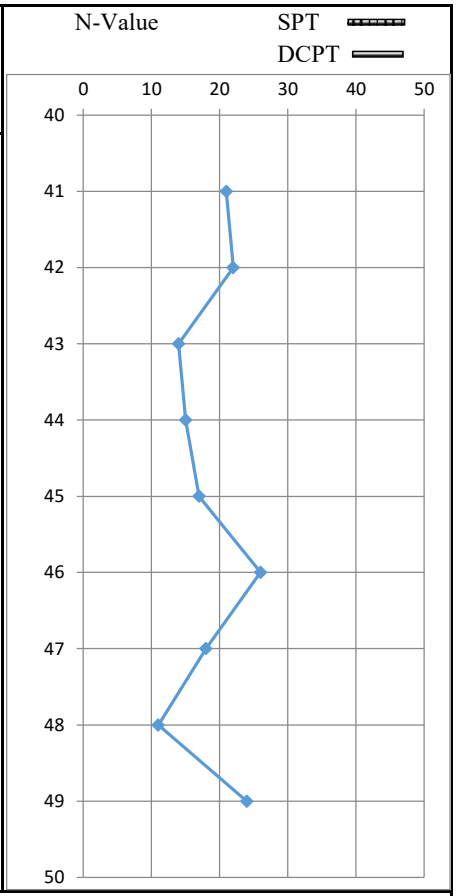
Project: Geotechnical Investigation for the Preparatory Survey on the Project for Intersection Improvement in Kathmandu

Client: Oriental Consultants Global Co., Ltd. JV with PADECO Co., Ltd. and CTI | Hole Location: BH-4

Location: Jadibuti | Start Date: 08/30/2022 | End Date: 09/06/2022

Identification: BH_4 Jadibuti Junction | **Coordinates: 337572.7437, 3062325.214** | Ground Water: 6.0m

Soil Description	Symbol	Depth, m	Sample No. & Type	No. of blows 15 cm	15 cm	15 cm	N-Value
Blackish grey low plastic, stiff to very stiff clayey silt with some fine sand. (Patan Formation)		- 41	SPT	7	11	10	21
		- 42	SPT	5	10	12	22
		- 43	SPT	4	6	8	14
		- 44	SPT	6	8	7	15
		- 45	SPT	10	9	8	17
Blackish grey low plastic, stiff to very stiff clayey silt with some fine sand. (Patan Formation)		- 46	SPT	9	12	14	26
		- 47	SPT	7	8	10	18
		- 48	SPT	3	4	7	11
		- 49	SPT	5	11	13	24
		- 50	SPT	6	8	9	17



End Depth		* Completed at 50+0.45m depth					
Types of Soil		**N Value**					
Granular Soil	Compactness	**0 to 4**	**4 to 10**	**10 to 30**	**30 to 50**	**> 50**	
		Very Loose	Loose	Med. Dense	Dense	Very Dense	
Cohesive Soil	Consistency	**0 to 2**	**2 to 4**	**4 to 8**	**8 to 16**	**16 to 32**	**> 32**
		Very Soft	Soft	Med. Soft	Stiff	Very Stiff	Hard

付録 4. ADB-TA の OD の補正方法

APPENDIX 4 HOW THE ADB-TA OD FOR 2020 WAS ADJUSTED TO MATCH THE OBSERVED TRAFFICAT TARGET INTERSECTIONS

1. Background of Adjustment

It was found that the forecasted traffic volume near the target intersections using the 2020 OD table projected in ADB-TA 2018 was overestimated compared to the observed traffic count data. This was because i) as much as 30% of the floating population was added to the nighttime population by zone and ii) the traffic growth associated with the optimistic development scenario of the New Eastern City was included.

Since the base OD table for ADA-TA 2018 could not be used to forecast future traffic demand in this Project, three sections of the screen line were set and the OD table was adjusted to match the volume of traffic passing through those cross-sections.

2. Aggregation Zone

In order to perform the three-section screen line adjustment shown in Figure 4.3.1 in the main body of the F/R, the OD table for the 171 zones used and forecasted in the Project were consolidated into the following four zones, naming as (East, Southwest, North, and Center).

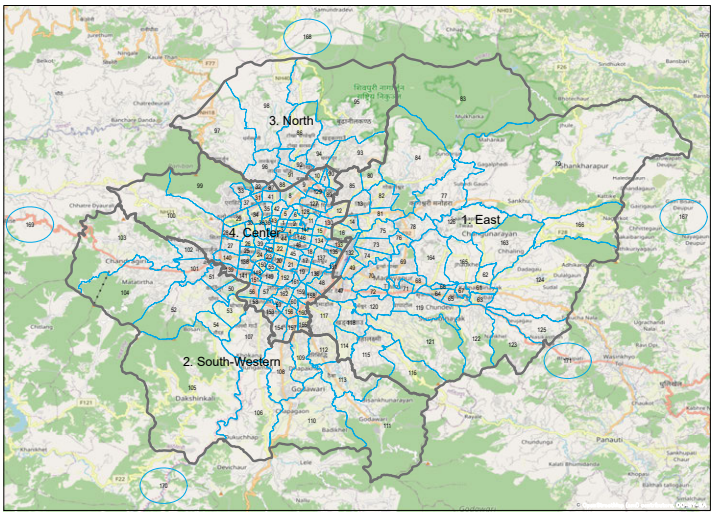


Figure-1 Aggregated Zoning Map

3. How to adjust the traffic

(i) The observed traffic volumes in 2020 on major roads crossing the three screen- lines were ascertained.

(ii) The 2020 OD table projected in ADT-TA 2018 was aggregated to determine the amount of traffic passing through each screen-line.

(iii) The screen-line adjustment factor was calculated so that (ii) matches (i), and then the OD table in (ii) was adjusted.

(iv) The OD table was adjusted by multiplying the traffic through each screen-line by the adjustment factor of each vehicle type.

4. Cross-sectional through-traffic by screen line

(1) East Section

Figure--2 Screen-line (East)

Table -1 Section Traffic Volume (East)

1. Observed traffic (unit: veh/day)

	Motorbike	Car	Truck	Bus	Total
E1	6,000	1,000	102	209	7,311
E2	6,000	1,000	102	209	7,311
E3	12,644	2,359	188	2,992	18,183
E4	8,710	3,903	480	1,580	14,673
E5	34,836	15,613	1,921	6,319	58,689
E6	10,116	1,887	151	2,394	14,548
E7	94,728	29,766	5,239	12,533	142,266
E8	51,772	10,192	1,102	3,837	66,903
Total	224,806	65,720	9,285	30,073	329,884

2. Traffic passing through the screenline (forecasted 2020OD in ADT-TA 2018)

398,140	148,305	33,049	24,653	604,147

3. Adjustment factor

0.5646406	0.4431408	0.2809465	1.2198515	-

(2) South-west section

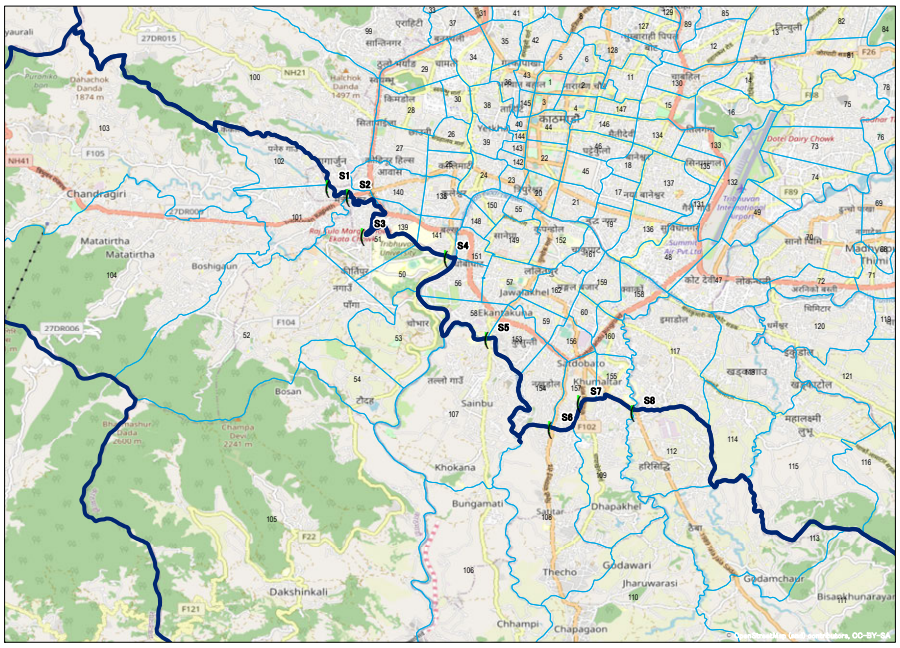


Figure-3 Screen-line (South-west)

Table -2 Section Traffic Volume (South-west)

1. Observed traffic (unit: veh/day)

	Motorbike	Car	Truck	Bus	Total
S1	6,000	1,000	102	209	7,311
S2	31,716	11,123	6,364	10,965	60,168
S3	6,000	1,000	102	209	7,311
S4	18,728	8,034	1,718	3,014	31,494
S5	17,646	10,079	2,536	913	31,174
S6	18,424	5,849	1,158	1,965	27,396
S7	18,424	5,849	1,158	1,965	27,396
S8	20,036	8,023	731	2,627	31,417
Total	136,974	50,957	13,869	21,867	223,667

2. Traffic passing through the screenline (forecasted 2020OD in ADT-TA 2018)

129,403	51,556	21,304	11,919	214,182

3. Adjustment factor

1.0585071	0.9883816	0.6510045	1.8346338	-

(3) North section

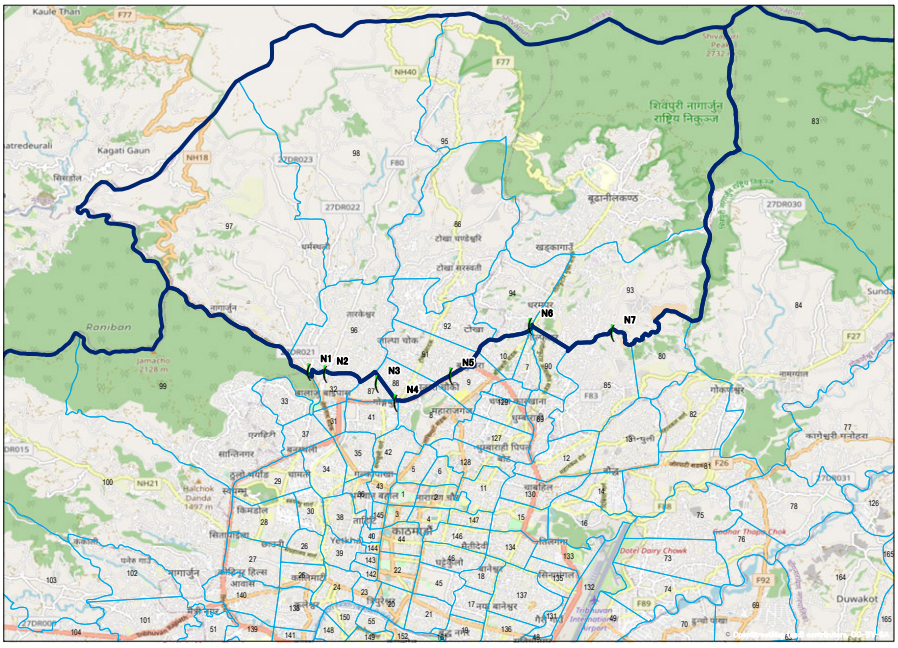


Figure-4 Screen-line (North)

Table-3 Section Traffic Volume (North)

1. Observed traffic (unit: veh/day)

	Motorbike	Car	Truck	Bus	Total
N1	5,994	4,492	1,178	1,601	13,265
N2	9,702	5,628	1,820	3,930	21,080
N3	6,000	1,000	102	209	7,311
N4	7,762	4,502	1,456	3,144	16,864
N5	6,000	1,000	102	209	7,311
N6	38,704	17,815	1,172	4,958	62,649
N7	6,000	1,000	102	209	7,311
Total	80,162	35,437	5,932	14,260	135,791

2. Traffic passing through the screenline (forecasted 2020OD in ADT-TA 2018)

65,804	28,483	8,126	4,535	106,948

3. Adjustment factor

1.2181934	1.2441456	0.7300025	3.1444322	-

5. OD after the screen-line adjustment

With the screen-line adjustment, traffic in the Kathmandu Metropolitan Area in 2020 was significantly reduced from 2,066,800 vehicles/day to 1,215,300 vehicles/day. This OD table is treated as the current OD for the Project.

Table -4 Results of Screen-line Adjustment

		2020 OD updated in ADB-TA2018						Revised 2020 OD by screen-line adjustment					
Motor bike		1:East	2:South-W	3:North	4:Center	total		1:East	2:South-W	3:North	4:Center	Total
	1	209,165	36,372	22,473	339,295	607,305	1	71,831	10,269	6,334	95,926	184,360
	2	0	8,371	1,811	127,592	137,774	2	0	2,862	757	57,276	60,895
	3	0	0	279	65,804	66,083	3	0	0	92	33,389	33,481
	4	0	0	0	367,756	367,756	4	0	0	0	126,185	126,185
	tot	209,165	44,743	24,563	900,447	**1,178,918**	tot	71,831	13,131	7,183	312,776	**404,921**
					Intra Vol.	585,571					Intra Vol.	200,970
					Intra vol. R	49.7%					Intra vol. R	49.6%
Car		1:East	2:South-W	3:North	4:Center	total		1:East	2:South-W	3:North	4:Center	Total
	1	115,797	7,139	4,487	136,679	264,102	1	74,251	3,065	1,940	60,416	139,672
	2	0	9,363	706	50,850	60,919	2	0	5,999	702	47,641	54,342
	3	0	0	116	28,483	28,599	3	0	0	67	32,662	32,729
	4	0	0	0	281,941	281,941	4	0	0	0	180,606	180,606
	tot	115,797	16,502	5,309	497,953	**635,561**	tot	74,251	9,064	2,709	321,325	**407,349**
					Intra Vol.	407,217					Intra Vol.	260,923
					Intra vol. R	64.1%					Intra vol. R	64.1%
Truck		1:East	2:South-W	3:North	4:Center	total		1:East	2:South-W	3:North	4:Center	Total
	1	25,202	2,848	1,460	28,741	58,251	1	22,005	1,728	872	16,764	41,369
	2	0	3,410	762	20,542	24,714	2	0	2,976	859	24,398	28,233
	3	0	0	433	8,126	8,559	3	0	0	389	9,624	10,013
	4	0	0	0	70,557	70,557	4	0	0	0	61,798	61,798
	tot	25,202	6,258	2,655	127,966	**162,081**	tot	22,005	4,704	2,120	112,584	**141,413**
					Intra Vol.	99,602					Intra Vol.	87,168
					Intra vol. R	61.5%					Intra vol. R	61.6%
Bus		1:East	2:South-W	3:North	4:Center	total		1:East	2:South-W	3:North	4:Center	Total
	1	5,748	1,125	1,639	21,889	30,401	1	16,783	2,614	3,863	50,720	73,980
	2	0	412	523	11,396	12,331	2	0	1,228	1,756	37,610	40,594
	3	0	0	198	4,535	4,733	3	0	0	575	21,746	22,321
	4	0	0	0	42,737	42,737	4	0	0	0	124,684	124,684
	tot	5,748	1,537	2,360	80,557	**90,202**	tot	16,783	3,842	6,194	234,760	**261,579**
					Intra Vol.	49,095					Intra Vol.	143,270
					Intra vol. R	54.4%					Intra vol. R	54.8%
Total		1:East	2:South-W	3:North	4:Center	total		1:East	2:South-W	3:North	4:Center	Total
	1	355,912	47,484	30,059	526,604	960,059	1	184,870	17,676	13,009	223,826	439,381
	2	0	21,556	3,802	210,380	235,738	2	0	13,065	4,074	166,925	184,064
	3	0	0	1,026	106,948	107,974	3	0	0	1,123	97,421	98,544
	4	0	0	0	762,991	762,991	4	0	0	0	493,273	493,273
	tot	355,912	69,040	34,887	1,606,923	**2,066,762**	tot	184,870	30,741	18,206	981,445	**1,215,262**
					Intra Vol.	1,141,485					Intra Vol.	692,331
					Intra vol. R	55.2%					Intra vol. R	57.0%

5. Confirmation of reproducibility of current OD forecasted using population by new zone

The current OD table shown in Table- 5 was re-forecasted by substituting 2020 OD table updated by the screen-line adjustment and the 2020 population by zone set in Table 4.3.2 in the main body of the F/R into the demand forecast model.

The results of comparing that OD table by screen line are shown in Table 4.3.1 in the same volume, and the differences are less than 6%, which is sufficiently reproducible.

Table-5 Result of the OD Reproduction: Final OD

	Revised 2020 OD by screen-line adjustment						Reproducted 2020 OD					
Motor bike		1:East	2:South-W	3:North	4:Center	Total		1:East	2:South-W	3:North	4:Center	Total
	1	71,831	10,269	6,334	95,926	184,360	1	71,864	14,420	8,308	95,404	189,996
	2	0	2,862	757	57,276	60,895	2	0	2,897	4,228	51,589	58,714
	3	0	0	92	33,389	33,481	3	0	0	84	29,044	29,128
	4	0	0	0	126,185	126,185	4	0	0	0	127,164	127,164
	tot	71,831	13,131	7,183	312,776	**404,921**	tot	71,864	17,317	12,620	303,201	**405,002**
					Intra Vol.	200,970					Intra Vol.	202,009
					Intra vol. R	49.6%					Intra vol. R	49.9%
Car		1:East	2:South-W	3:North	4:Center	Total		1:East	2:South-W	3:North	4:Center	Total
	1	74,251	3,065	1,940	60,416	139,672	1	74,656	6,328	4,370	58,801	144,155
	2	0	5,999	702	47,641	54,342	2	0	5,998	3,138	44,643	53,779
	3	0	0	67	32,662	32,729	3	0	0	59	29,532	29,591
	4	0	0	0	180,606	180,606	4	0	0	0	180,318	180,318
	tot	74,251	9,064	2,709	321,325	**407,349**	tot	74,656	12,326	7,567	313,294	**407,843**
					Intra Vol.	260,923					Intra Vol.	261,031
					Intra vol. R	64.1%					Intra vol. R	64.0%
Truck		1:East	2:South-W	3:North	4:Center	Total		1:East	2:South-W	3:North	4:Center	Total
	1	22,005	1,728	872	16,764	41,369	1	22,219	2,916	1,097	16,603	42,835
	2	0	2,976	859	24,398	28,233	2	0	2,994	1,569	23,871	28,434
	3	0	0	389	9,624	10,013	3	0	0	410	9,113	9,523
	4	0	0	0	61,798	61,798	4	0	0	0	60,919	60,919
	tot	22,005	4,704	2,120	112,584	**141,413**	tot	22,219	5,910	3,076	110,506	**141,711**
					Intra Vol.	87,168					Intra Vol.	86,542
					Intra vol. R	61.6%					Intra vol. R	61.1%
Bus		1:East	2:South-W	3:North	4:Center	Total		1:East	2:South-W	3:North	4:Center	Total
	1	16,783	2,614	3,863	50,720	73,980	1	16,893	6,758	4,253	49,090	76,994
	2	0	1,228	1,756	37,610	40,594	2	0	1,204	2,707	33,539	37,450
	3	0	0	575	21,746	22,321	3	0	0	572	21,038	21,610
	4	0	0	0	124,684	124,684	4	0	0	0	126,030	126,030
	tot	16,783	3,842	6,194	234,760	**261,579**	tot	16,893	7,962	7,532	229,697	**262,084**
					Intra Vol.	143,270					Intra Vol.	144,699
					Intra vol. R	54.8%					Intra vol. R	55.2%
Total		1:East	2:South-W	3:North	4:Center	Total		1:East	2:South-W	3:North	4:Center	Total
	1	184,870	17,676	13,009	223,826	439,381	1	185,632	30,422	18,028	219,898	453,980
	2	0	13,065	4,074	166,925	184,064	2	0	13,093	11,642	153,642	178,377
	3	0	0	1,123	97,421	98,544	3	0	0	1,125	88,727	89,852
	4	0	0	0	493,273	493,273	4	0	0	0	494,431	494,431
	tot	184,870	30,741	18,206	981,445	**1,215,262**	tot	185,632	43,515	30,795	956,698	**1,216,640**
					Intra Vol.	692,331					Intra Vol.	694,281
					Intra vol. R	57.0%					Intra vol. R	57.1%

付録 5. 平面交差点形状の代替案比較

APPENDIX 5. STUDY ON AT GRADE INTERSECTION OPTION

5.1 Study Background

This appendix describes the study on Koteshwor intersection option for Koteshwor intersection considering the utilization of south of Tribhuvan airport land.

5.2 At Grade Improvement Options

The Koteshwor Intersection is studied under three improvement options with the help of micro-simulation using the VISSIM. The options are listed as below:

Table 5.1 List of Identified Options

Option-1	Improvement at with single intersection at Koteshwor
Option-2	Improvement at with a triangular plan with a new bypass
Option-3	Improvement with a roundabout plan

The outlines under the listed options are summarized below.

(1) Outline of Option-1: Single Intersection Option

Under this option, Koteshwor Intersection will be improved by providing additional lanes within the available 50m of ROW. This forms only one intersection similar to the existing layout and the traffic flow is controlled installing the traffic signal at the intersection. This is the only option available if additional land acquisition for intersection improvement is not possible.

(2) Outline of Option-2: Triangular Plan Option

Under this option, a bypass link across TIA land will be constructed between Araniko Highway leg and Ring Road South leg of the Koteshwor Intersection. This forms a triangular road network similar at Tinkune intersection with three road intersections on three apex of the triangle thus formed. The traffic flow at the Koteshwor Intersection will be controlled with the separate traffic signals installed on the three apex intersections. This option requires the land transfer from TIA as a new bypass road is to be constructed on the southern land of TIA.

(3) Outline of Option-3: Roundabout Option

Under this option, a bypass road similar to Option-2 will be constructed across TIA land between Araniko Highway and Ring Road South and this will be utilized to form a wide roundabout. Provision is made for of merging and diverging of traffic from/to the intersecting legs. This enables the circular flow of traffic eliminating the direct crossing of vehicles and thus eliminating the need of traffic signals. Circular road traffic is given the higher priority. Hence the traffic entering the roundabout must yield to the circulating traffic. This option also requires the land transfer from TIA as a new bypass road is to be constructed on the southern land of TIA.

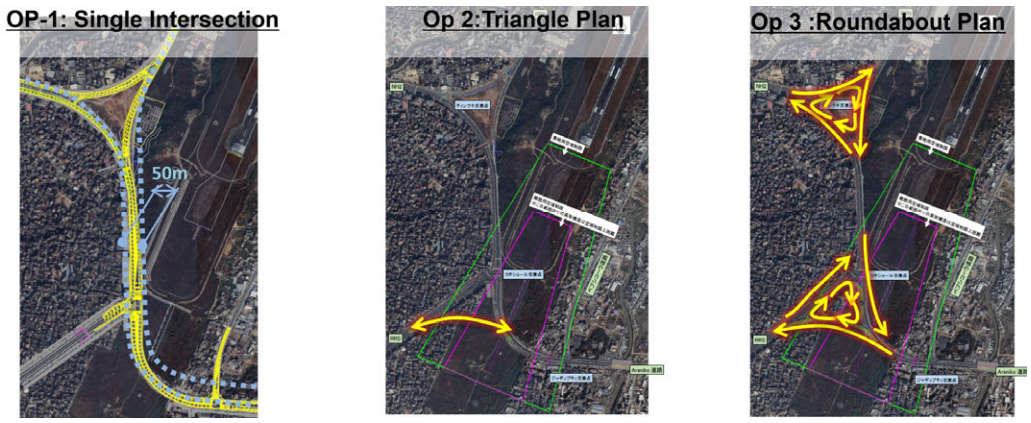


Figure 5.1 Outlines of Traffic Flow under Identified Options

5.3 Traffic Signal Timing

The traffic operation across the Koteshwor Intersection as observed in the survey year showed that the existing traffic signalization has average length of phase cycle in the peak hour as high as 420 sec. This causes the significant delay to the traffic crossing the intersection.

The length of signal cycle is desired to keep lower. But this should be sufficient enough for pedestrian crossing. For the improvement options described above the signal timing is redesigned and a cycle time of 180 secs is planned as the optimum cycle for vehicles and pedestrian. Also the number of phases in a cycle should be as low as possible. Currently there is a minor leg from the west (From Seti-Opi Marga) connected directly to the intersection. The direct access from/to this leg is prohibited. Which enables to reduce the no of phases too.

(1) Single Intersection Plan

The single intersection is planned to have three phases. The green time is split proportionately to the volume of traffic in each phases. The design output of the signal timing is shown in as in the figure5.2.

Legend

T: Through Direction
L: Left Direction
R: Right Direction
Yellow: No. of veh./h

Green Arrow: Go
Red Arrow: Stop

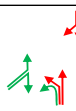
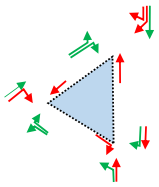
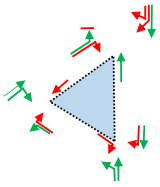
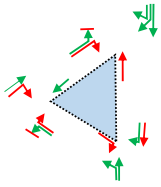
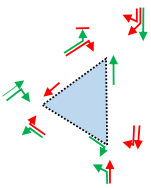
1ϕ	2ϕ	3ϕ	
			
G:61 Y:4 R1	G:71 Y:4 R1	G:33 Y:4 R1	Cycle Time: 180

Figure 5.2 Traffic Flow and Phase Design for Single Intersection Option

(2) Triangular Intersection Plan

There will be separate traffic lights in three intersections at three apex of triangles but they are synchronized to function as single intersection. The integrated intersection is planned to have four phases. The green time is split proportionately to the volume of traffic flowing in each phases. The design output of the signal timing is as in the figure5.3.

Legend
T: Through Direction
L: Left Direction
R: Right Direction
Yellow: No. of veh./h

ϕ1	ϕ2	ϕ3	ϕ4	
				
G:10 Y:4 R1	G:71 Y:4 R1	G:34 Y:4 R1	G:46 Y:4 R1	Cycle Time: 180

Green Arrow: Go
Red Arrow: Stop

Figure 5.3 Traffic Flow and Phase Design for Triangular Plan Option

5.4 Roundabout Plan

Roundabout plan provides the opportunity of continuous flow of traffic in the circular path with merging and diverging flows only. Hence, it does not require the traffic signals for the intersection control.

Figure 5.4 Showing Peak Traffic Flow for Roundabout Option

5.5 Traffic Improvement Effects

The improvement capacity of different options identified were studied based on the microsimulation of the future traffic using VISSIM Software. This method analyses the change in the vehicle trips per hour and the change in the delay time experienced by road users passing the intersection.

(1) Microsimulation Setting

The simulation tasks were carried out for the projected traffic at the design year 2032 based on the traffic survey carried out in 2019. The simulation was carried out by taking the traffic for the evening peak hour (i.e 17:00 – 18:00 Hrs) traffic of the design year for the without-project scenario of the grade separated facility. That means the simulation results are the estimation of the impacts at Koteshwor Intersection at the end of design life without building the grade separated intersection infrastructures. In this analysis, only the Koteshwor Intersection was considered for the simulation purpose.

(2) Microsimulation Result

The simulation was run for one-hour duration for each of the options discussed above for at-grade intersection improvement at Koteshwor Intersection with adequate calibration. The results of the simulation run is summarized in table5.2.

The simulation result shows the Option-1 accommodates 22,899 vehicle trips with average delay of 102 secs per vehicle. Option-2 accommodates 23,344 vehicle trips with average delay of 51

secs per vehicle and Option-3 accommodates 18,995 vehicle trips with average delay of 238 sec per vehicle.

Table 5.2 Microsimulation Results of Different Improvement Options at Koteshwor Intersection

Koteshwor Intersection	OP-1 Single intersection	OP-2 Triangle Plan	OP-3 Roundabout Plan
No. Trip completed vehicle (Veh.)	22,899	23,344 (445)	18,995 (-3,904)
Average Delay(s)	102.8	51.8 (51.01)	238.24 (-145.3)
3. Cycle Time(s)	180	180	None

PS: Values inside parenthesis shows the difference of values from that with Option-1

From the microsimulation, the Option-2 of Triangular Intersection arrangement is the best option with maximum intersection capacity and minimum control delay. If Option-2 is chosen considering the difficulty of land acquisition from TIA land and private land owners, almost equal capacity of intersection can be achieved with double the delay (ie. 102 secs) than the best option (Option-2). Still this improves about 4 times of the current value of delay experienced by road users.

5.6 Geometric Study

Requirement for developing the road structure under the airspace limitation area is that road surface fully covered. In addition considering the utilization of TIA, tunnel structure should be applied to avoid the division of land. Geometric study for applying tunnel structure is shown in the figure5.5. As result of that, following issues are raised.

- Residential area will be divided by new road. Crossing structure will be required
- Even if maximum vertical grade is applied, the structure is exposed throughout entire airport land
- There are traffic safety issues due to steep grade; Rear-end collision with the signal waiting car and Collison during channelization in circular road
- Drainage system is required

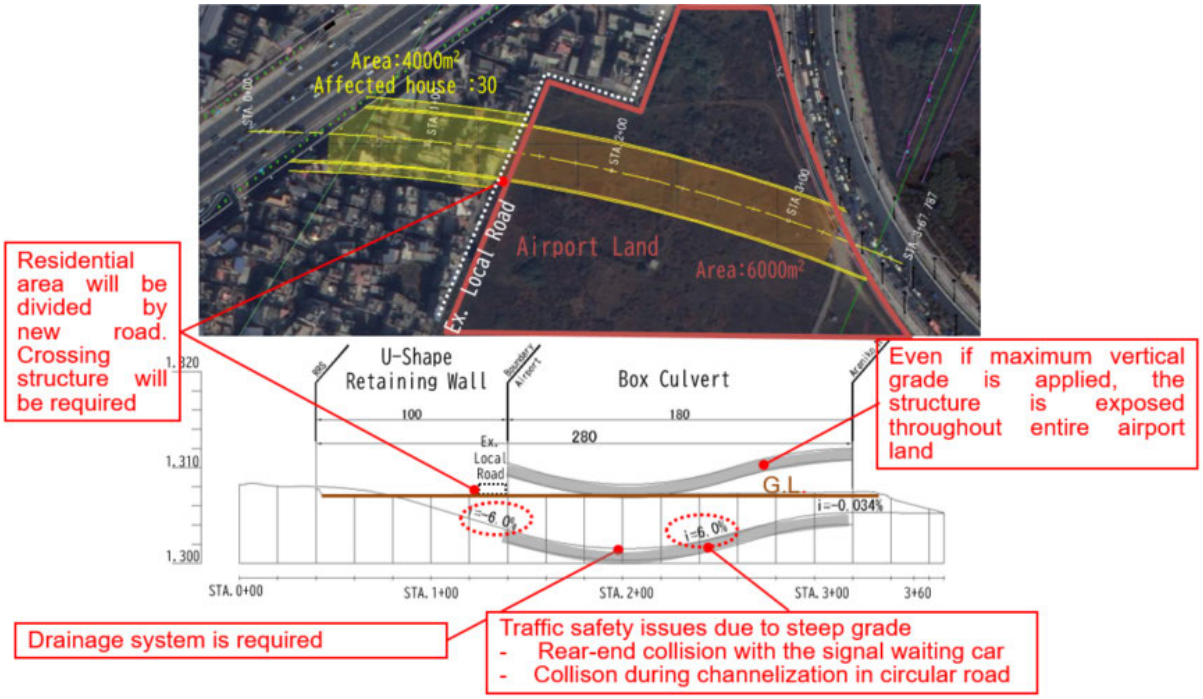
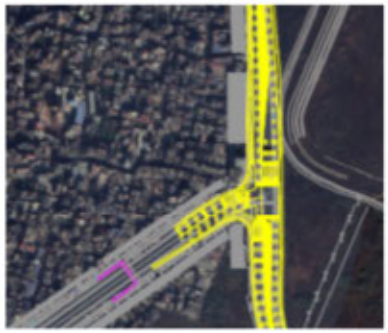


Figure 5.5 Geometric Study for Applying the Tunnel Structure

5.7 Result

The result of this study is summarized in Table5.3

Table 5.3 Summary of At Grade intersection Option Study

	OP-1: Single Intersection	OP-2: Triangle Plan	OP-3 : Roundabout Plan
Image			
Traffic Improvement	Ave. Delay time: 102.8s Trip comp. veh.:22,899 veh/h	Ave. Delay time: 51.8s Trip comp. veh.:23,344 veh/h	Ave. Delay time: 238.2s Trip comp. veh.:18,995 veh/h
Geometric Issue	None	- Traffic safety issues due to steep grade near signal intersection.	- Traffic safety issues due to steep grade near signal intersection.
Aviation Issue	None	- Tunnel is exposed throughout airport land	- Tunnel is exposed throughout airport land
Land Issue	None	- Residential land is divided by new route, new crossing structure is necessary.	- Residential land is divided by new route, new crossing structure is necessary.
Required Land	None	Private:4,000m2 Airport:6,000m2	Private:4,000m2 Airport:6,000m2
Affected house	None	30	30
Add. Cost*	None	24 Mil. USD	24 Mil. USD

* Rough estimation for new bypass route only. Land acquisition cost is not included .

付録 6. 図面集

Preparatory Survey
for
Koteshwor Intersection Improvement Project

INDEX OF DRAWINGS

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B	**AT GRADE ROAD**	
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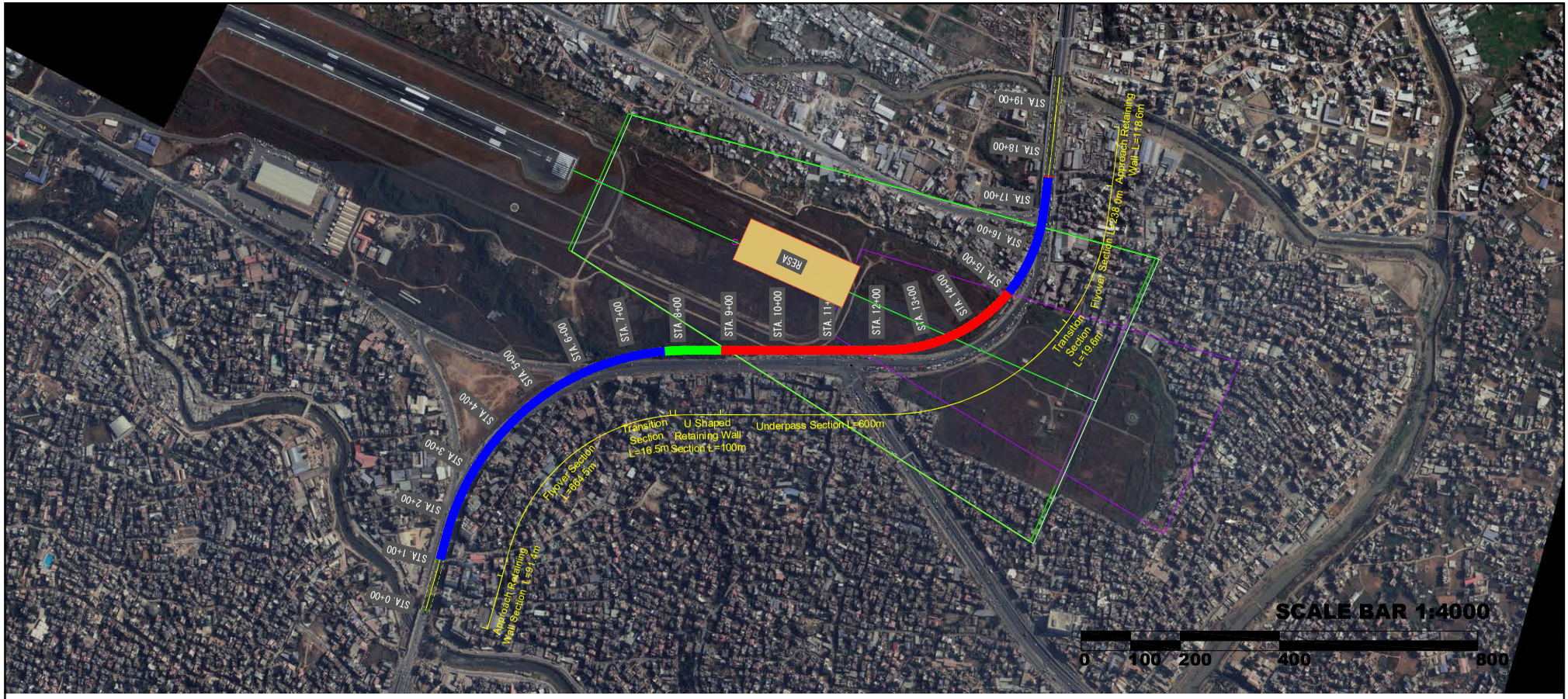
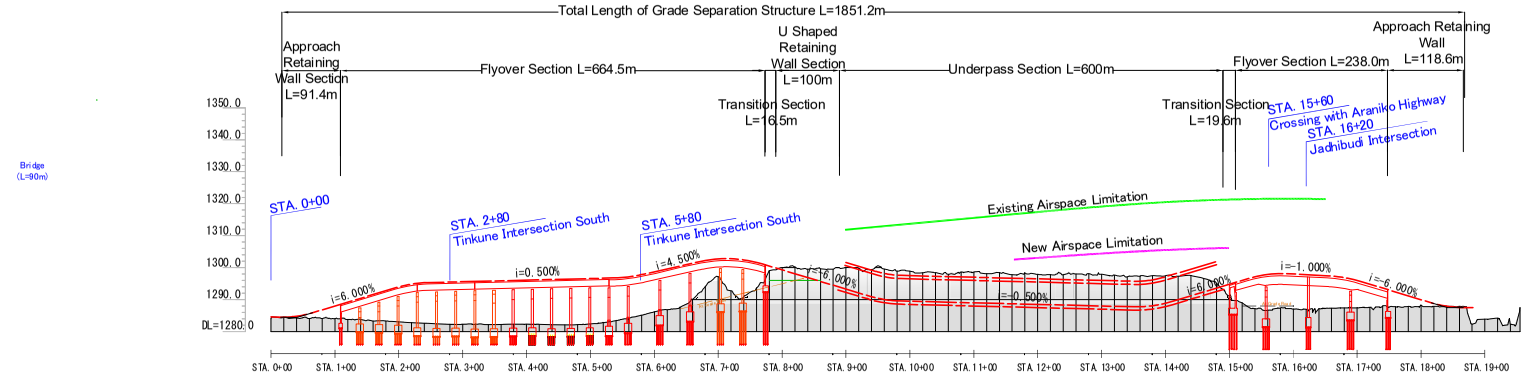
Appendix 6-1

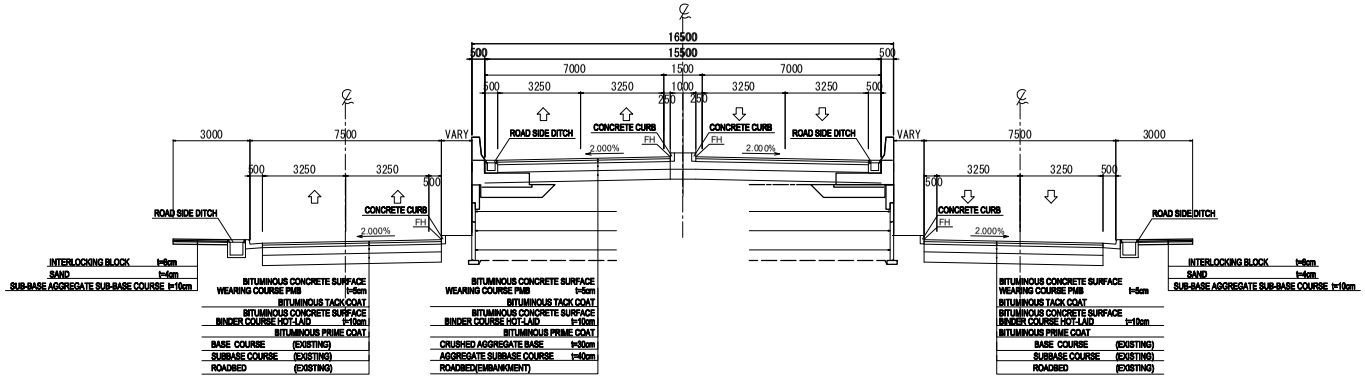
A. GRADE SEPARATION STRUCTURE

Appendix 6-3





Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/4000 JANUARY 2024	GENERAL VIEW OF STRUCTURE TYPE OF GRADE SEPARATION	DWG. NO: A 1



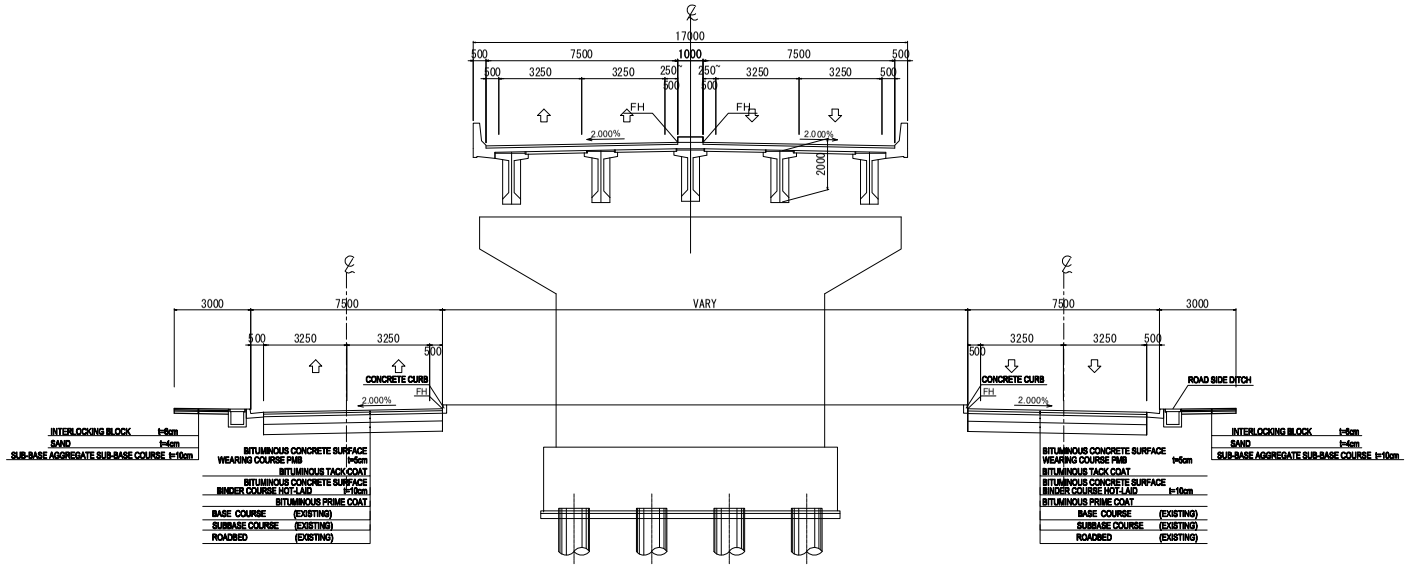
Bridge Approch Retaining Wall Section

1 TYPICAL CROSS SECTION (1)

SCALE 1:100

Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/100 JANUARY 2024	TYPICAL CROSSSECTION 1	DWG. NO: A 2

Appendix 6-5



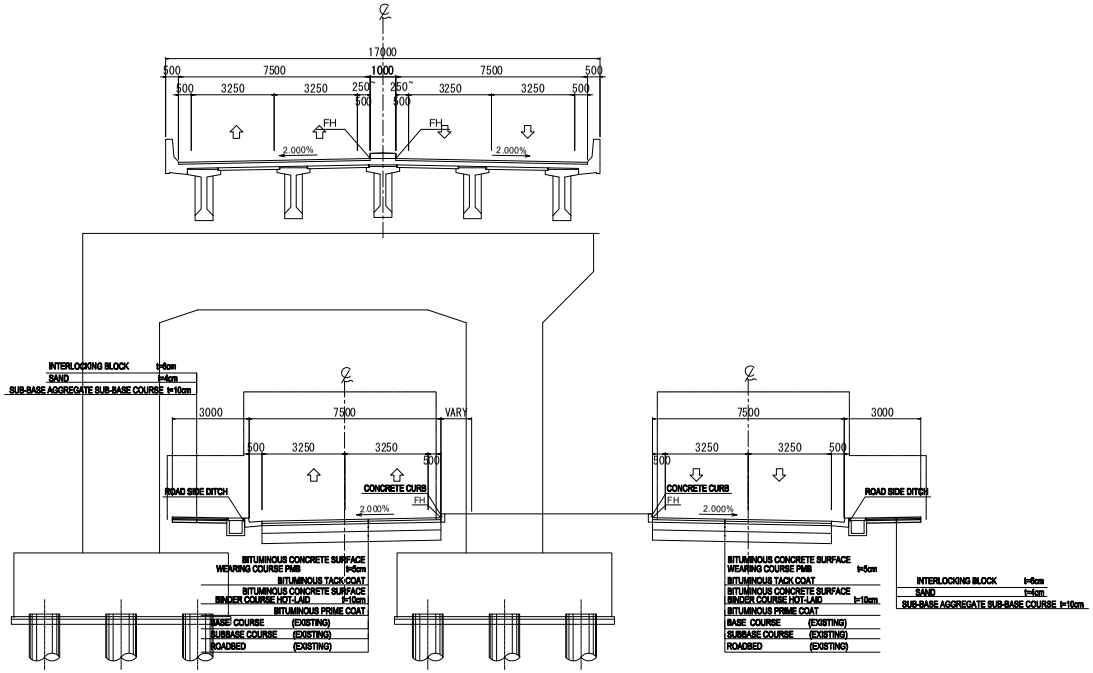
Bridge Section with Single Pier

1 TYPICAL CROSS SECTION (3)

SCALE 1:100

Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/100 JANUARY 2024	TYPICAL CROSSSECTION 2	DWG. NO: A 3

Appendix 6-6

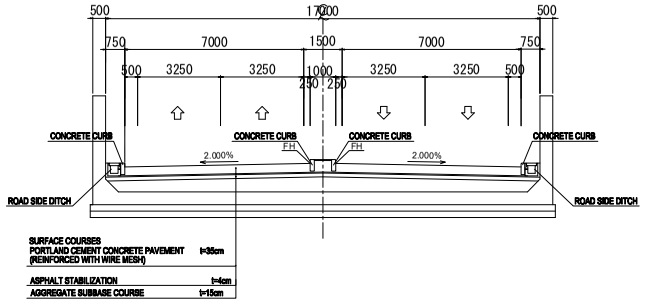


Bridge Section with Portal Pier

1 TYPICAL CROSS SECTION (3)

SCALE 1:100

Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/100 JANUARY 2024	TYPICAL CROSSSECTION 3	DWG. NO: A4



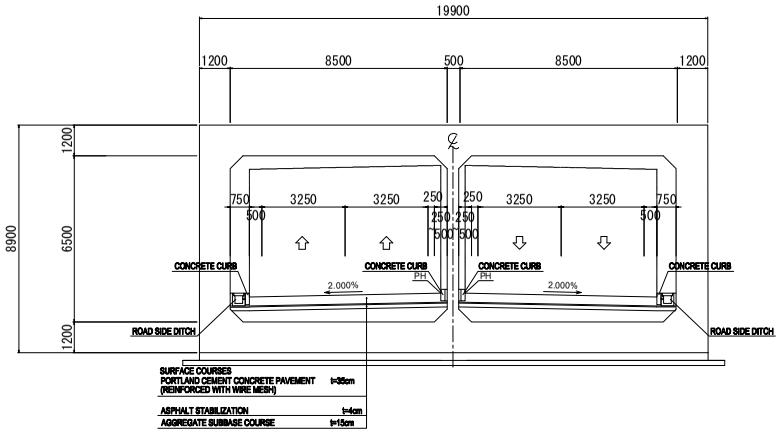
Transition Section Between Bridges and Box Culvert

1 TYPICAL CROSS SECTION (4)

SCALE 1:100

Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/100 JANUARY 2024	TYPICAL CROSSSECTION 4	DWG. NO: A 5

Appendix 6-8

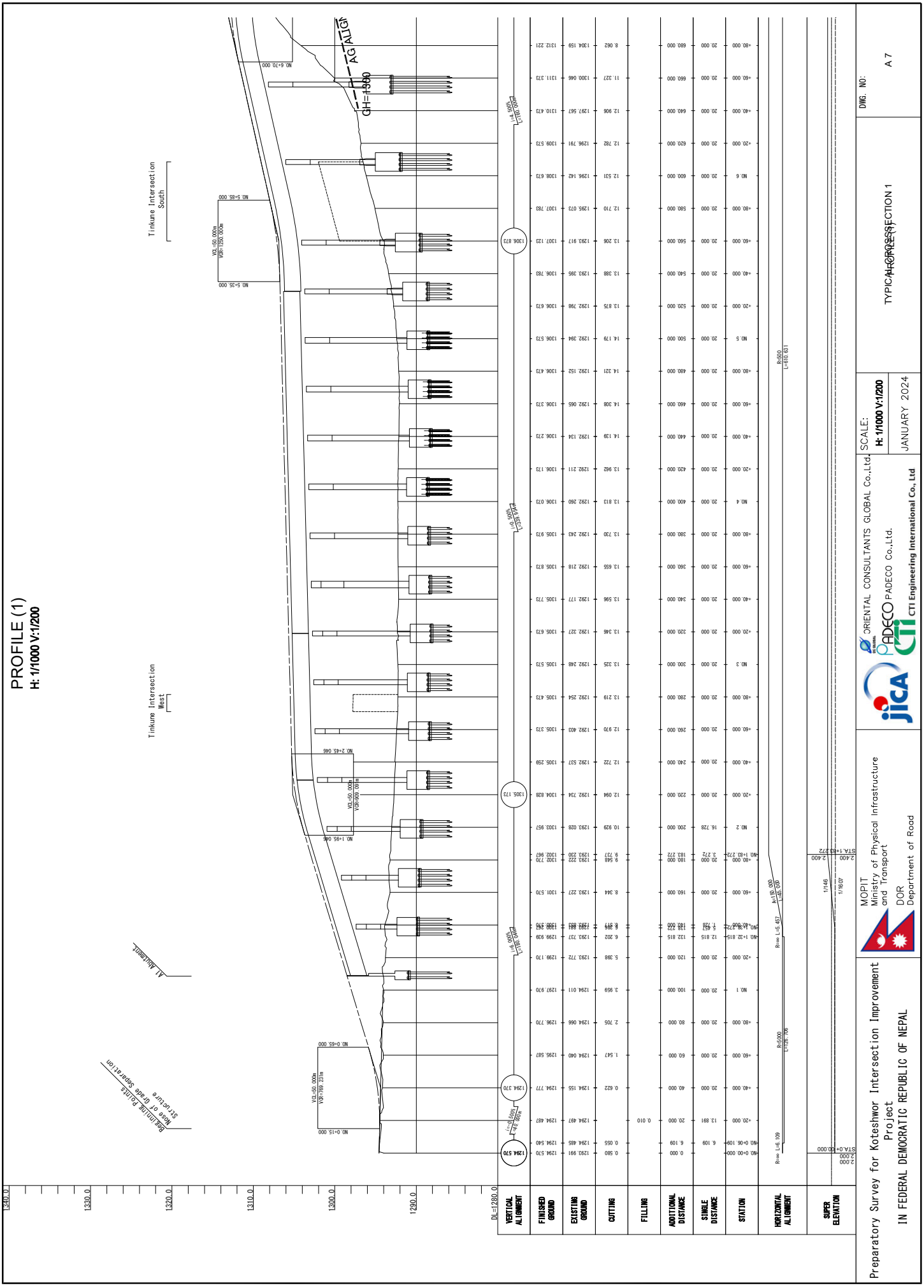


Box Culvert Section

1 TYPICAL CROSS SECTION (5)

SCALE 1:100

Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/100 JANUARY 2024	TYPICAL CROSSSECTION 5	DWG. NO: A 6


PROFILE (1)
H: 1/1000 V:1/200
Preparatory Survey for Koteshwor Intersection Improvement Project
IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL
MOPIT
Ministry of Physical Infrastructure and Transport
DOR
Department of Road
ORIENTAL CONSULTANTS GLOBAL Co.,Ltd.
PADECO Co.,Ltd.
CTI Engineering International Co., Ltd
SCALE:
H: 1/1000 V:1/200
JANUARY 2024
TYPICAL CROSS SECTION 1
(ALIGNMENT)
DWG. NO:
A 7
VERTICAL ALIGNMENT
FINISHED GROUND
EXISTING GROUND
CUTTING
FILLING
ADDITIONAL DISTANCE
SINGLE DISTANCE
STATION
HORIZONTAL ALIGNMENT
SUPER ELEVATION
Tinkune Intersection South
Tinkune Intersection West
AG ALIGN
GH=1300
At Abutment
Base monitor Points
Note on Grade separation
Structure

PROFILE (2)

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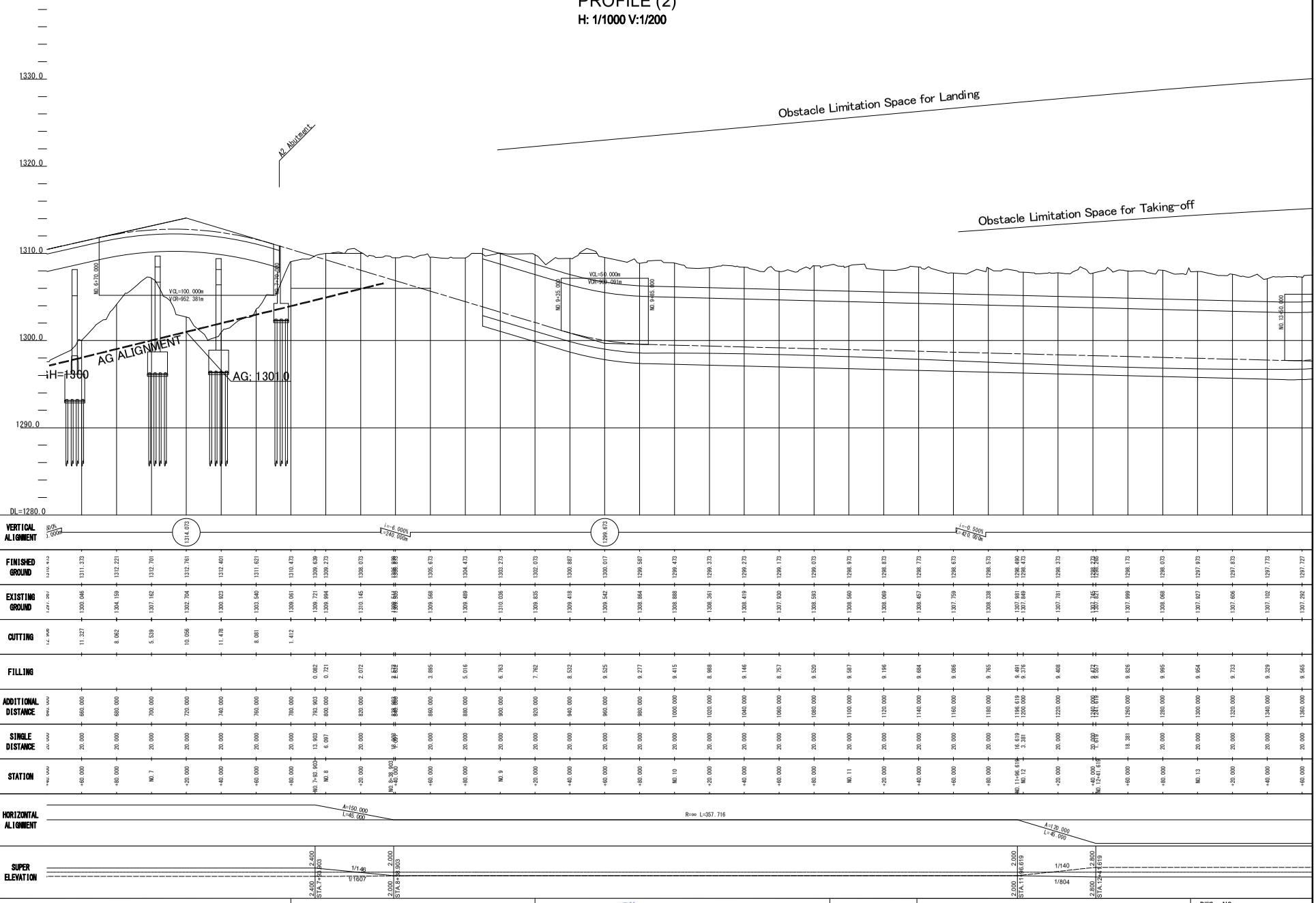
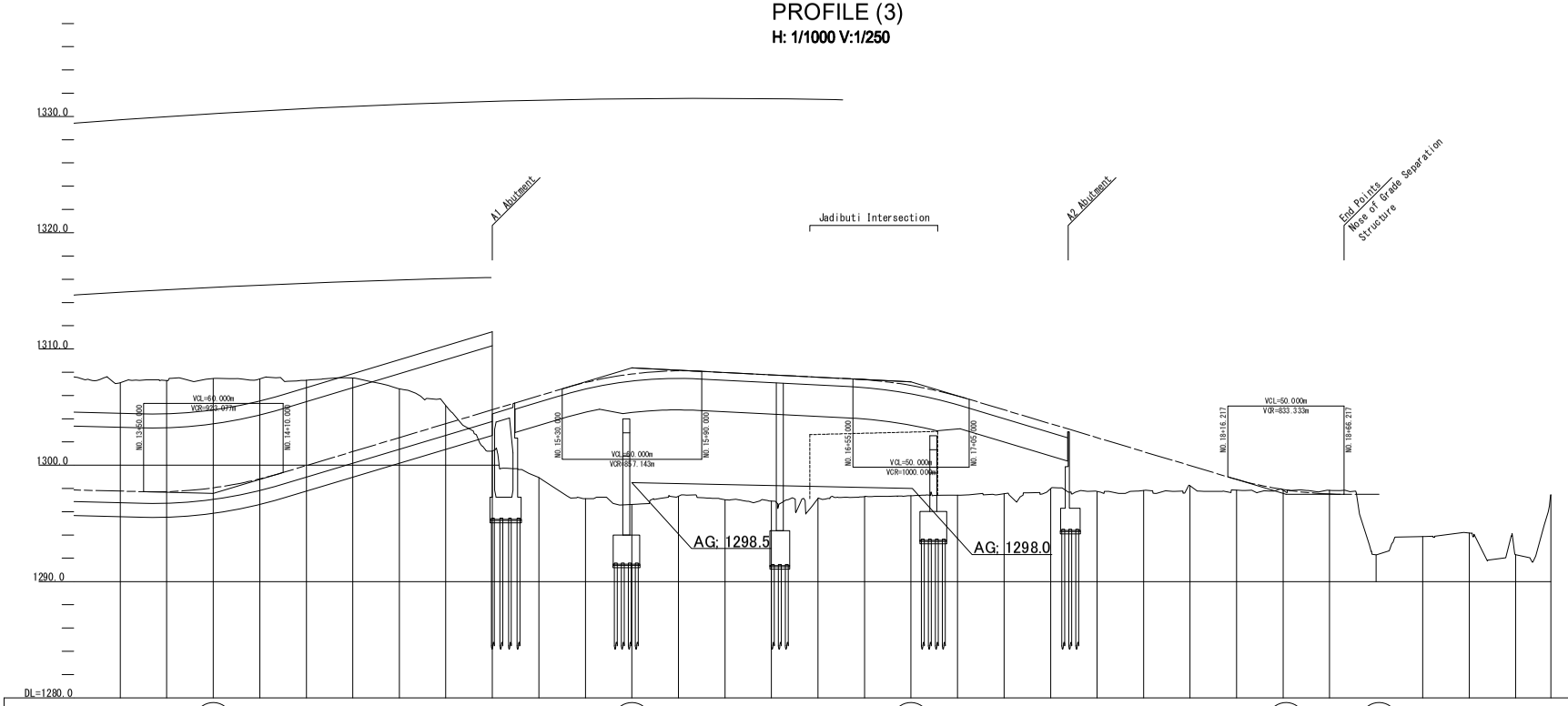


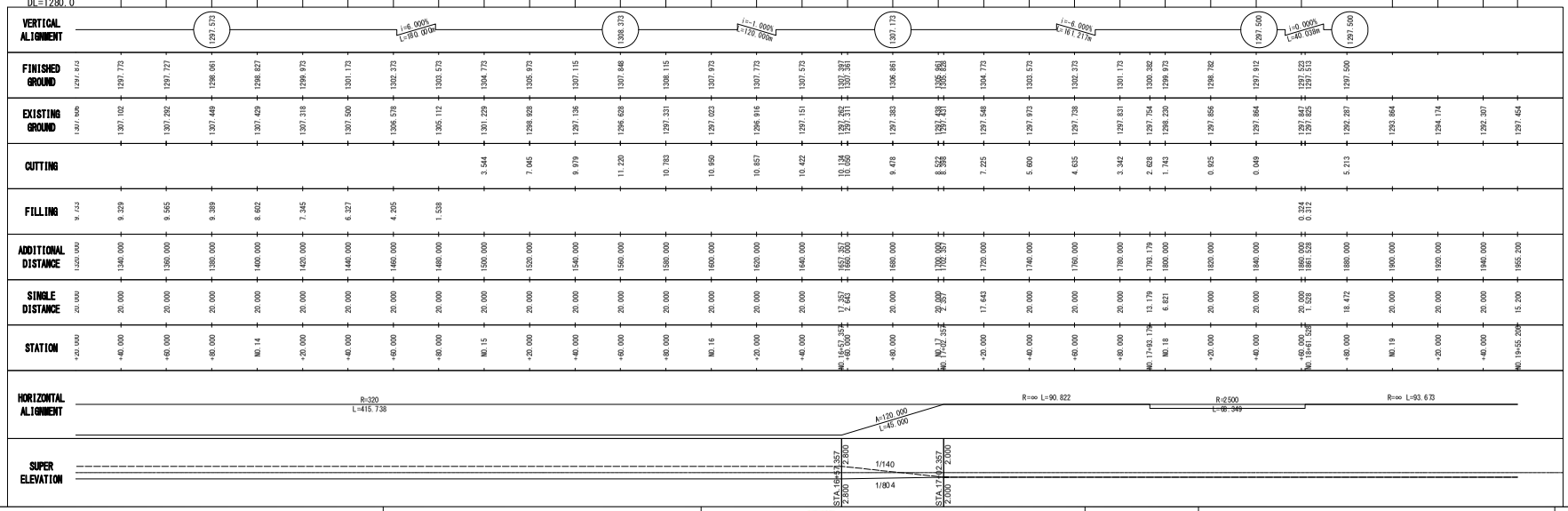
Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road
JICA ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: **H: 1/1000 V:1/200** JANUARY 2024
PROFILE (2)	DWG. NO: A 8

Appendix 6-11

PROFILE (3)

H: 1/1000 V:1/250



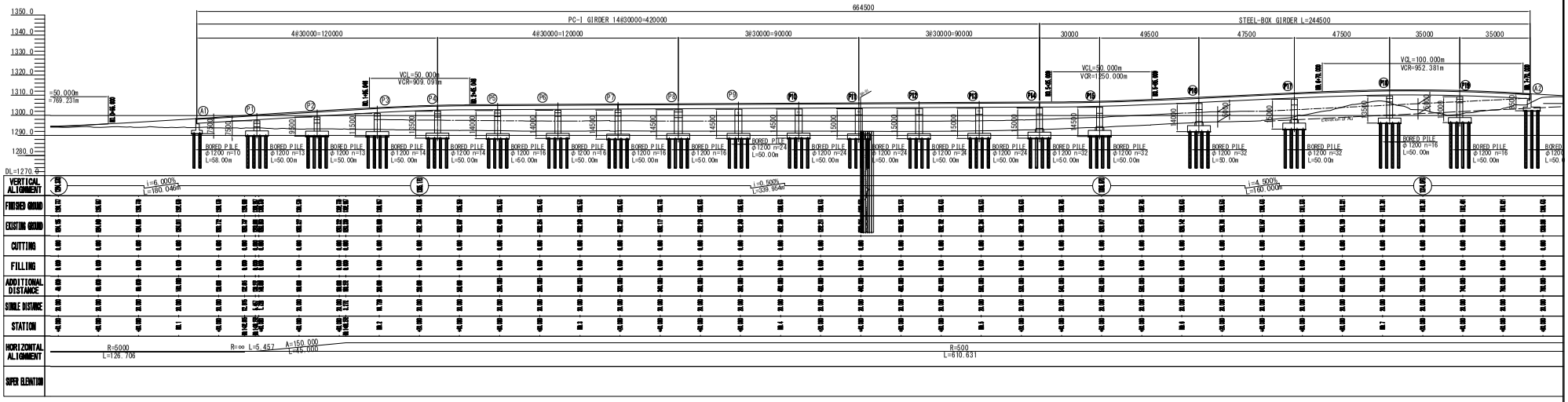


Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: **H: 1/1000 V:1/200** JANUARY 2024	PROFILE (3)	DWG. NO: A 9

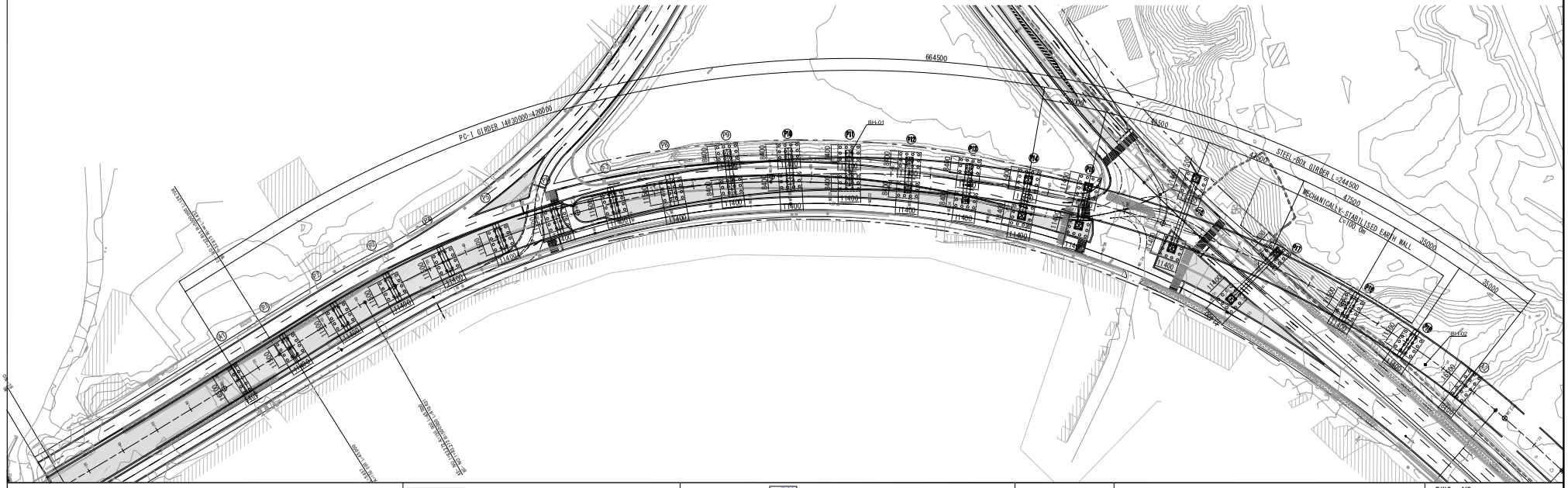
Appendix 6-12

TINKUNE BRIDGE GENERAL VIEW (1)

PROFILE **Scale: A1: 1/1000, A3: 1/2000**



PLAN Scale: A1: 1/1000, A3: 1/2000

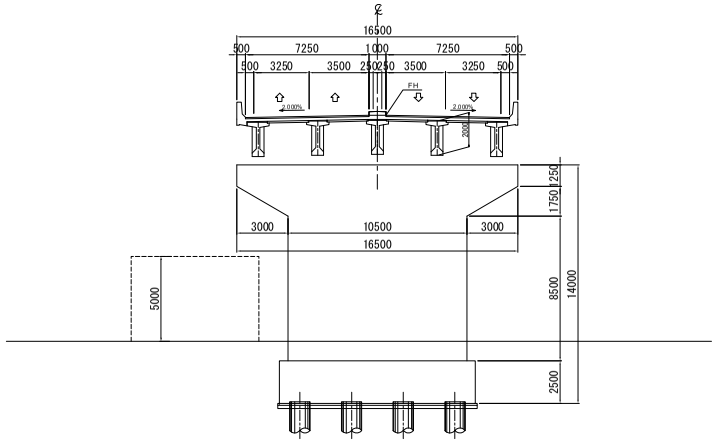


Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	TINKUNE BRIDGE GENERAL VIEW (1)	DWG. NO: A 10

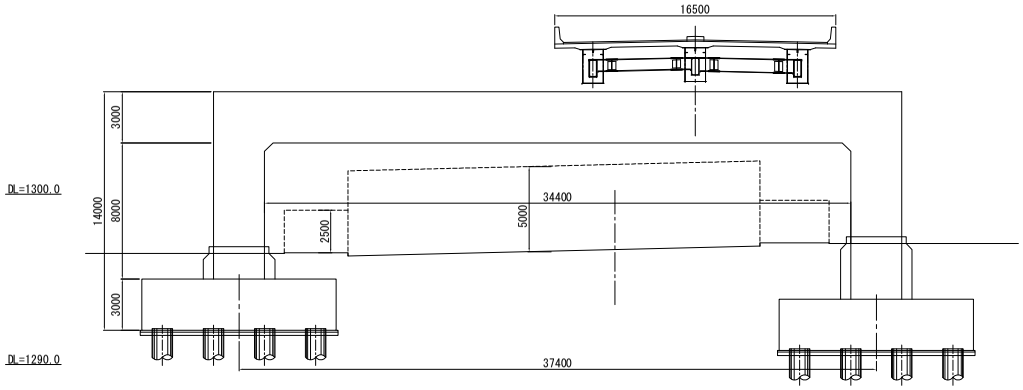
TINKUNE BRIDGE GENERAL VIEW (2)

FRONT VIEW **Scale: A1: 1/300, A3: 1/600**

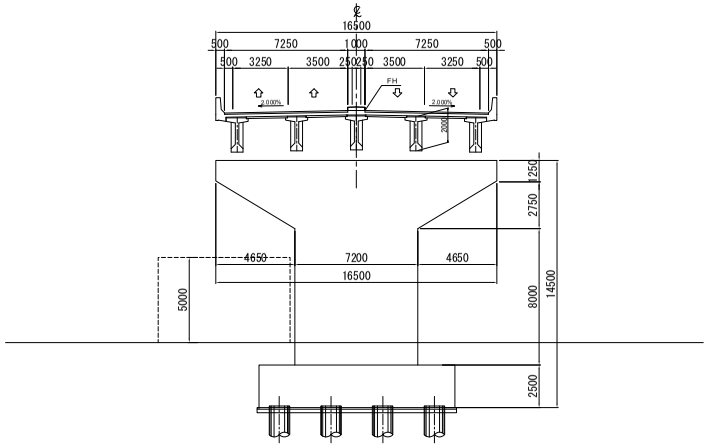
P6-PIER



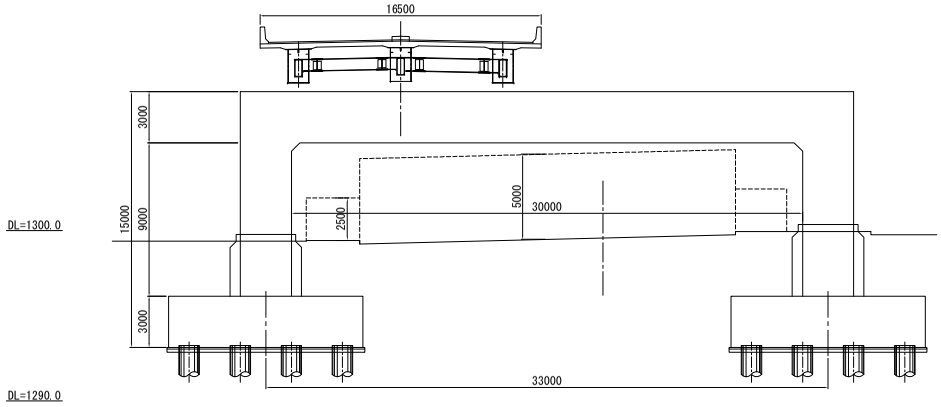
P16-PIER



P8-PIER



P17-PIER



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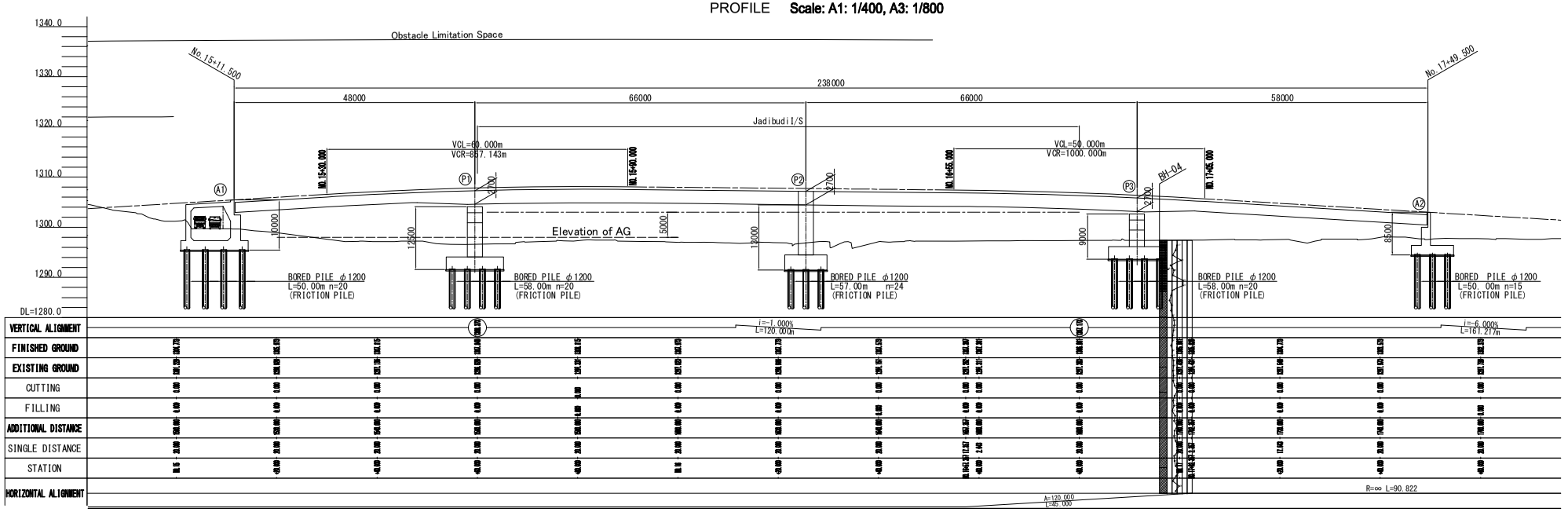
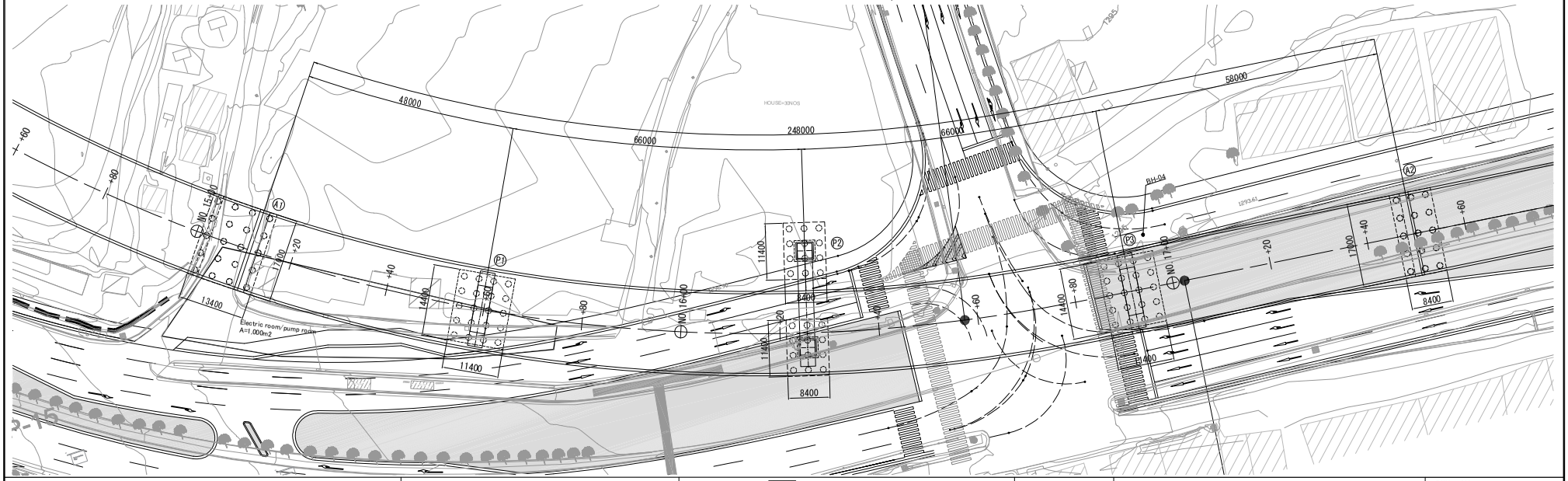
JADIBUDI BRIDGE GENERAL VIEW (1)

PROFILE **Scale: A1: 1/400, A3: 1/800**



PLAN Scale: A1: 1/400, A3: 1/800

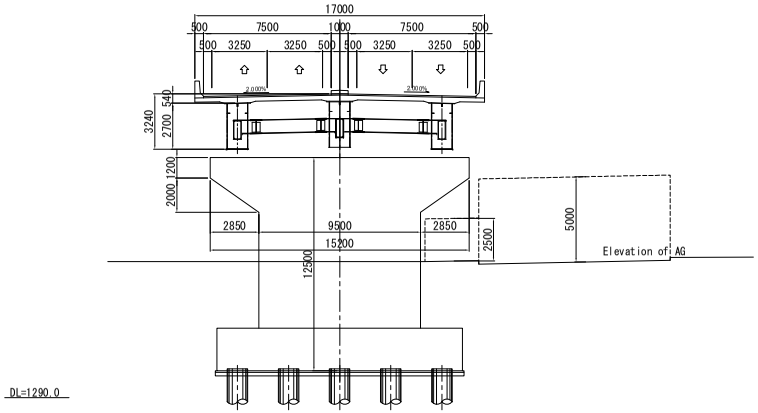


Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	JADIBUDI BRIDGE GENERAL VIEW (1)	DWG. NO: A 12

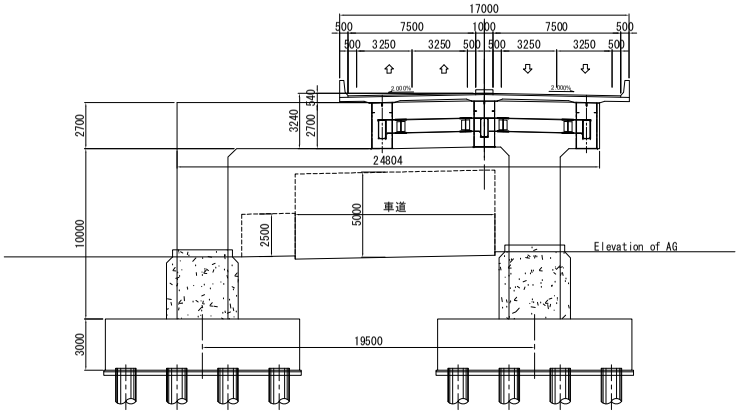
JADIBUDI BRIDGE GENERAL VIEW (2)

FRONT VIEW **Scale: A1: 1/300, A3: 1/600**

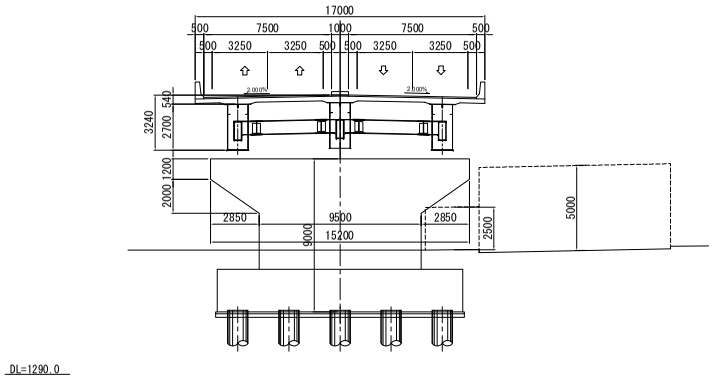
P1-PIER



P2-PIER



P3-PIER



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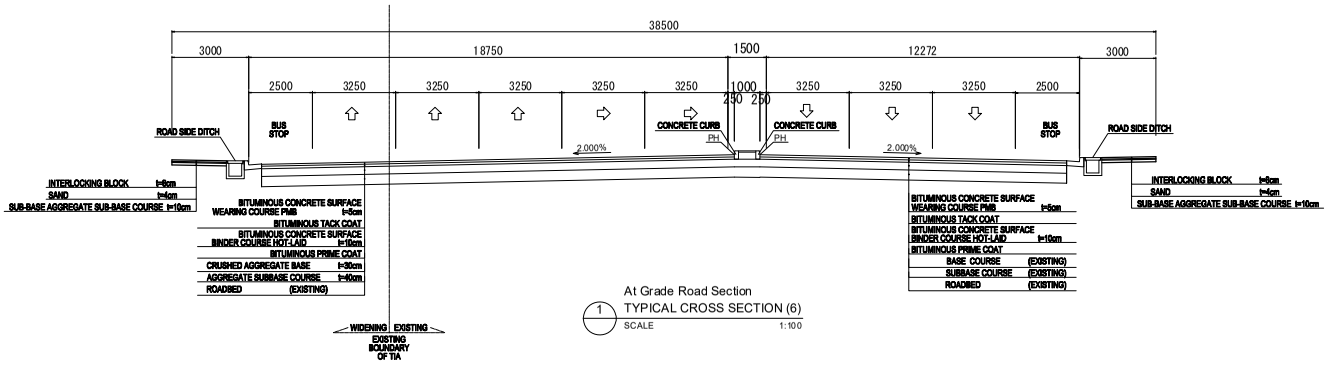
Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	JADIBUDI BRIDGE GENERAL VIEW (2)	DWG. NO: A 13

B. AT GRADE ROAD

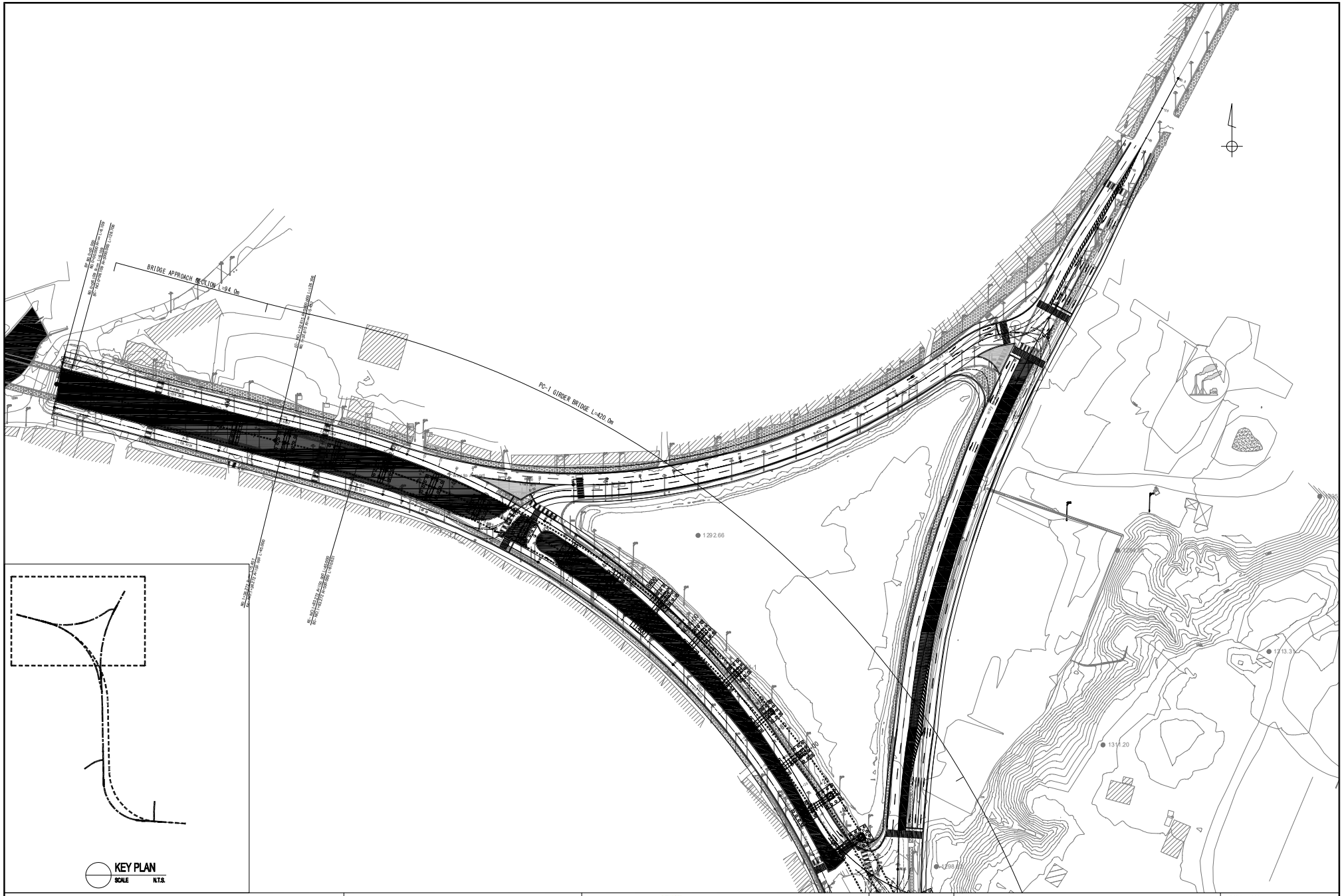


At Grade Road Section

1 TYPICAL CROSS SECTION (6)

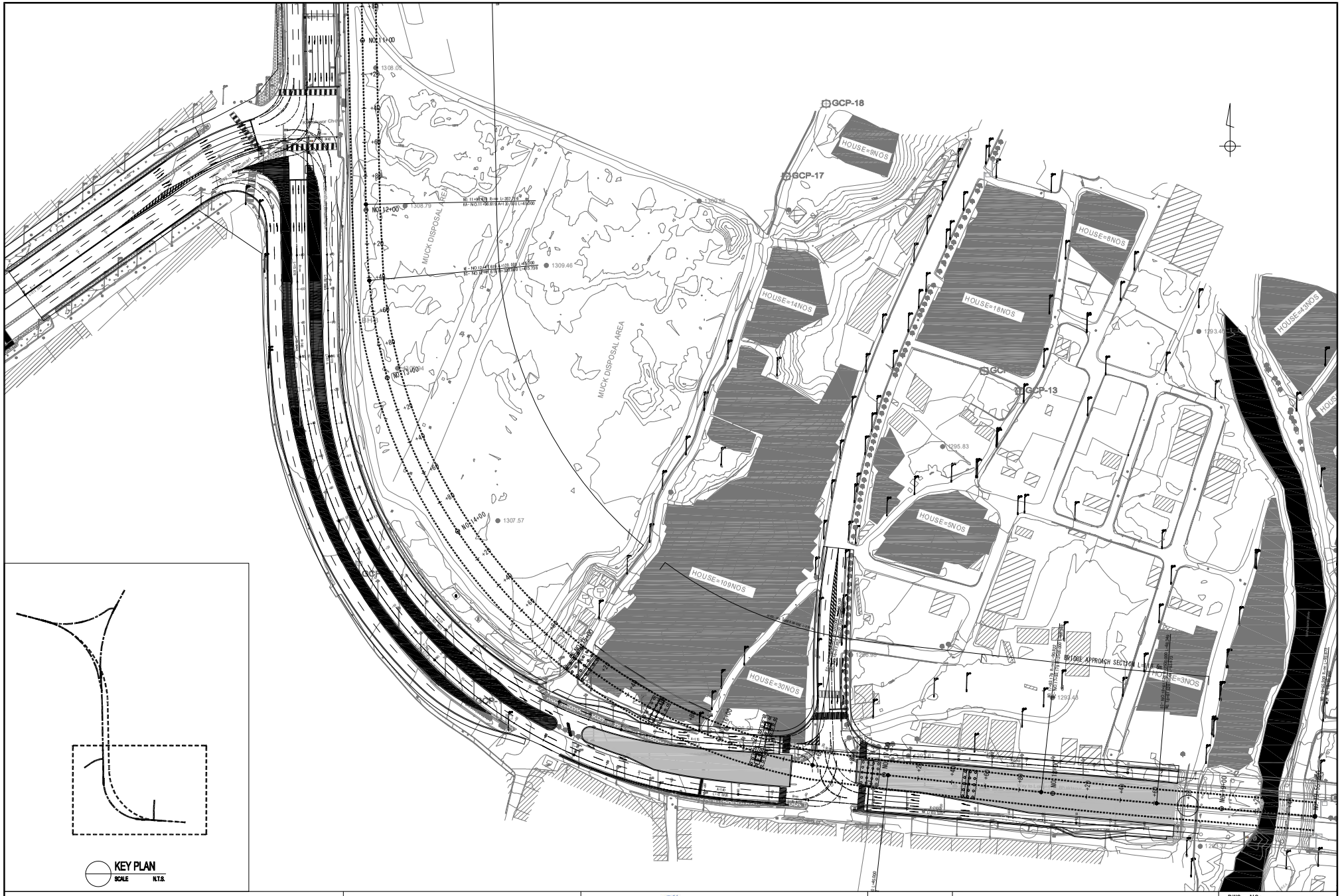
SCALE 1:100

Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/100 JANUARY 2024	TYPICAL CROSSSECTION	DWG. NO: B 1



Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/1000 JANUARY 2024	PLAN VIEW (1)	DWG. NO: B 1

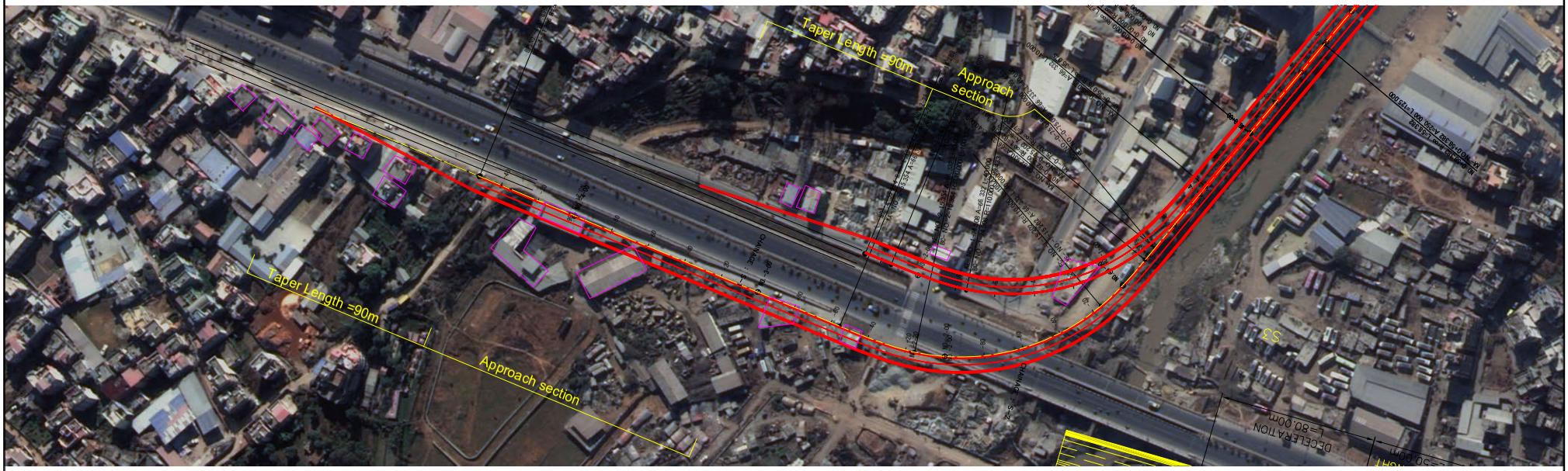
Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/1000 JANUARY 2024	PLAN VIEW (2)	DWG. NO: B 2



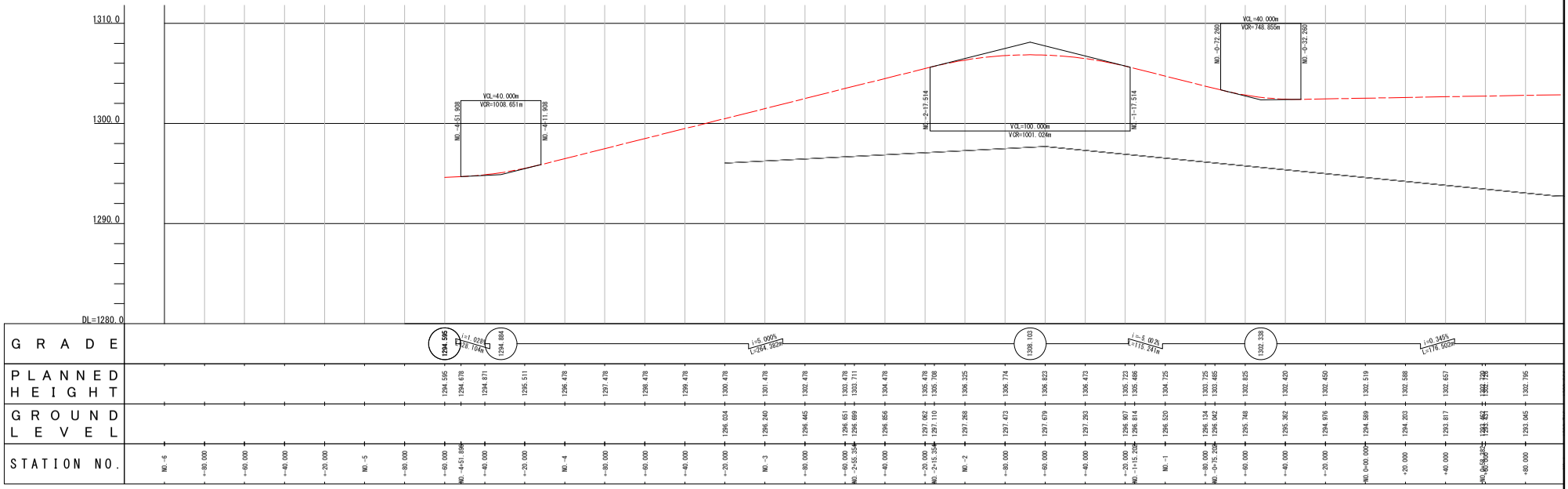
Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: 1/1000 JANUARY 2024	PLAN VIEW (3)	DWG. NO: B 3

R. REFERENCE MANOHARA RIVER BYPASS PLAN

PLAN(1) H=1:1000

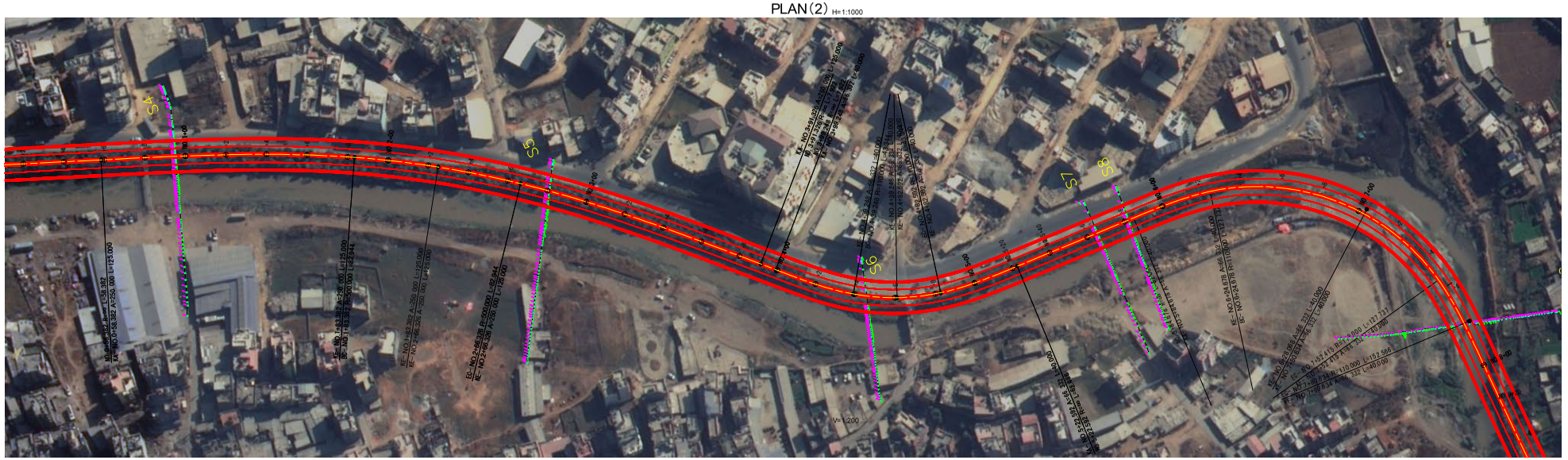


PROFILE(1) V=1:200 H=1:1000

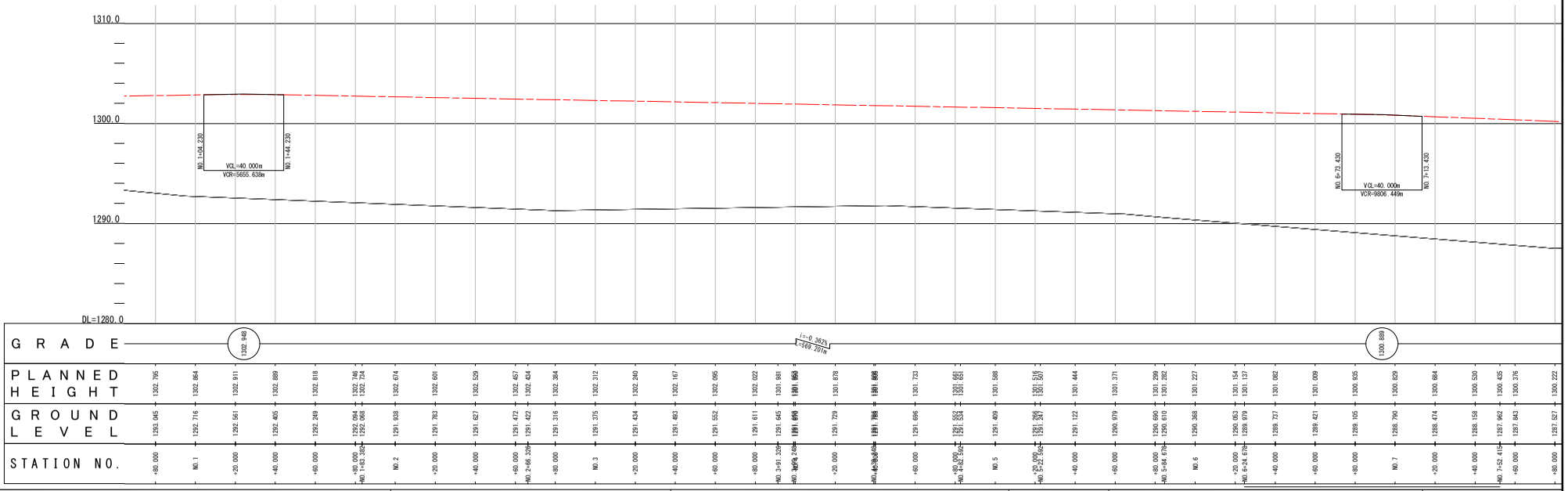


Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	PLAN & PROFILE 1	DWG. NO: R 1

PLAN (2) H=1:1000

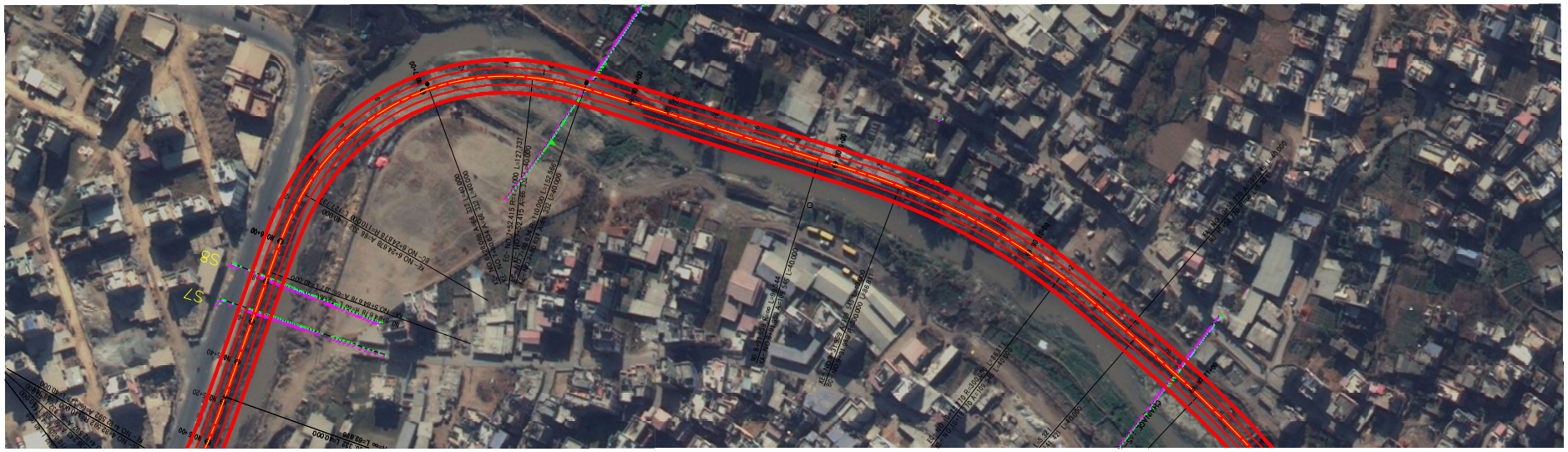


PROFILE (2) V=1:200 H=1:1000

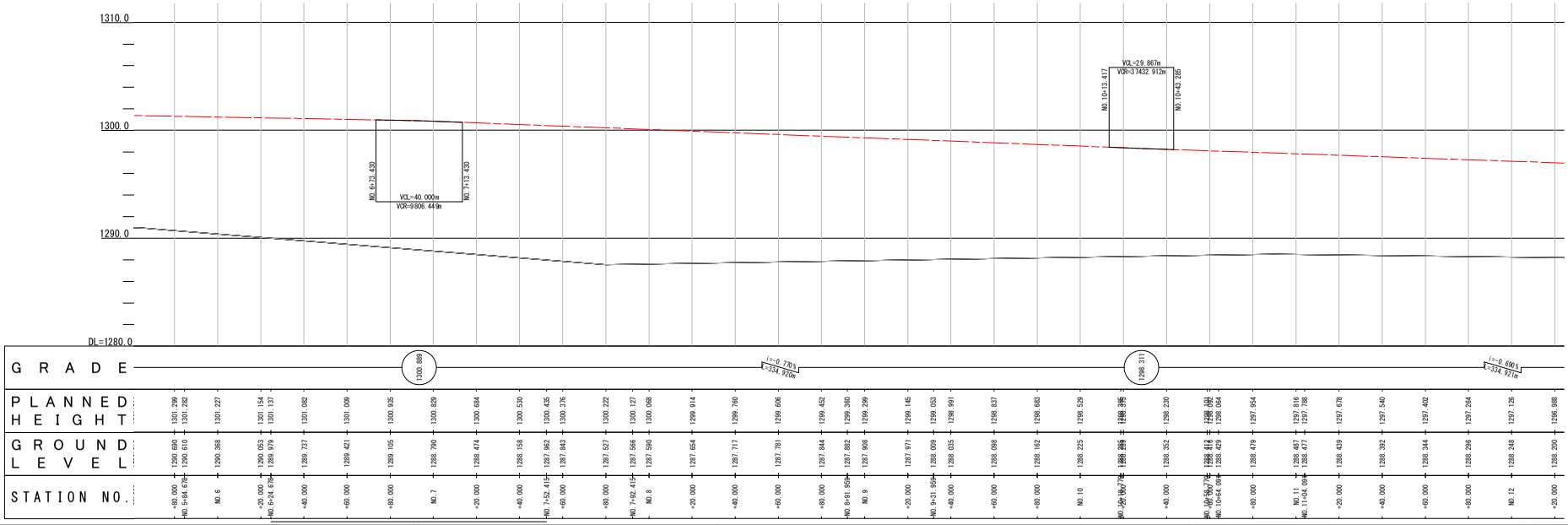


Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	PLAN & PROFILE 2	DWG. NO: R 2

PLAN (3) H=1:1000



PROFILE (3) V=1:200 H=1:1000



Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	PLAN & PROFILE 3	DWG. NO: R3

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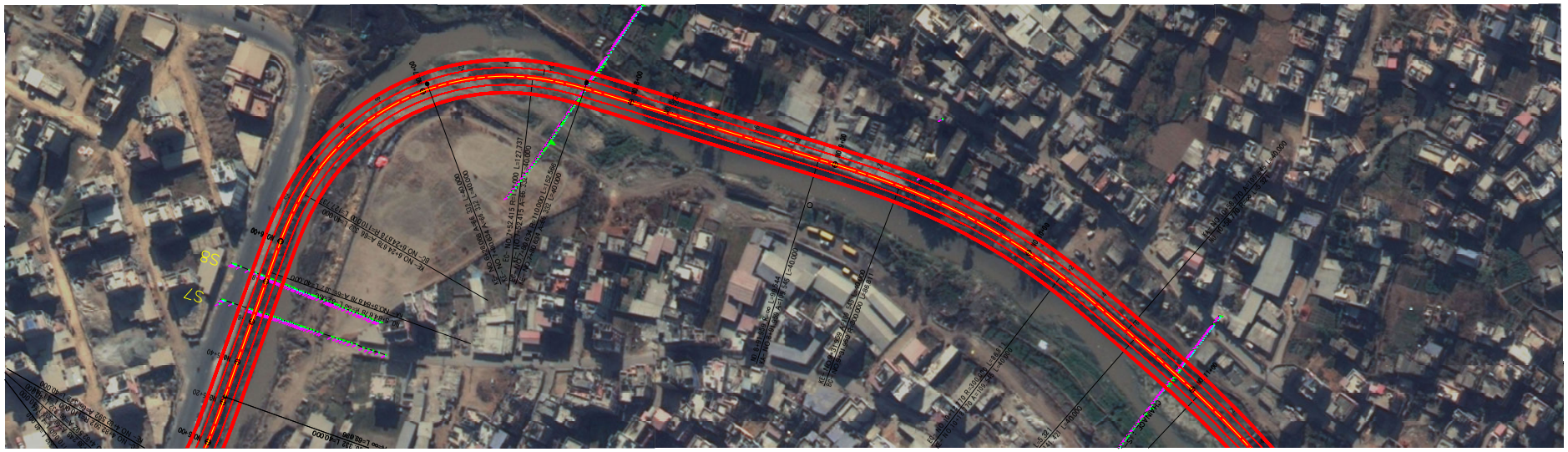
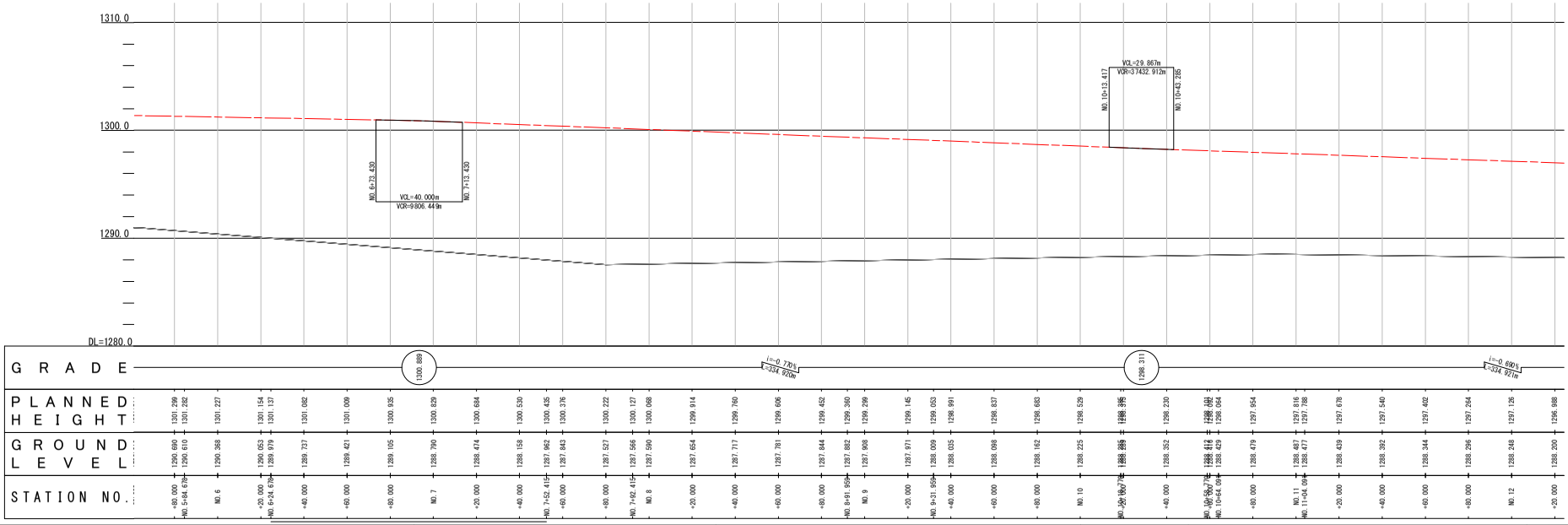
PLAN (3) H=1:1000

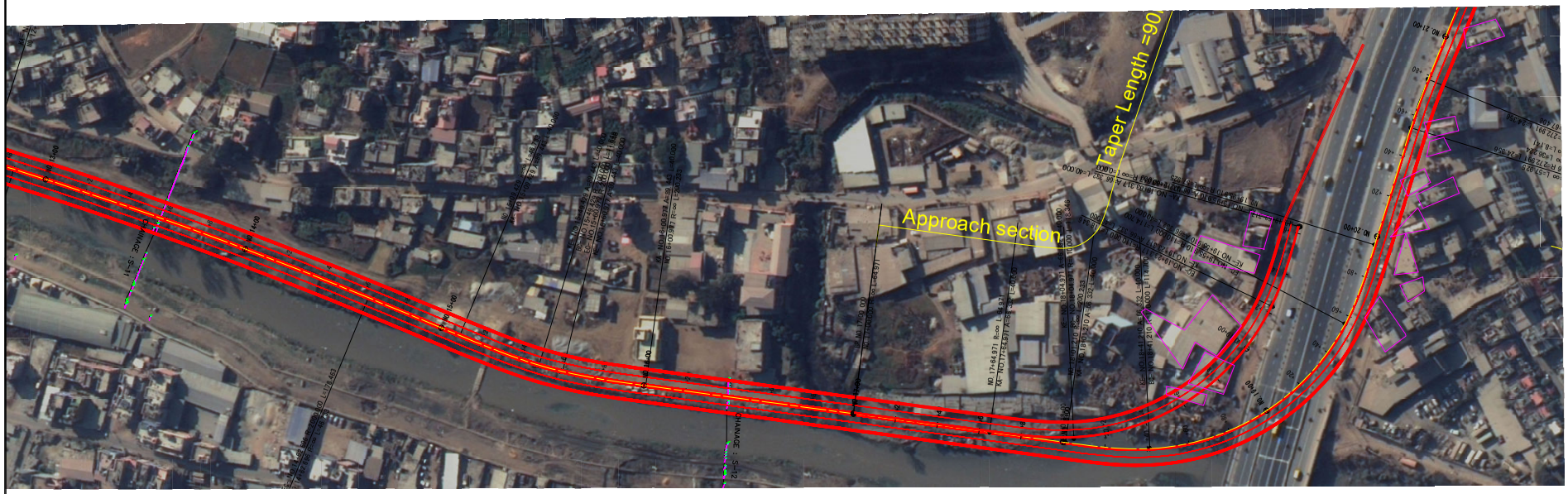


PROFILE (3) V=1:200 H=1:1000

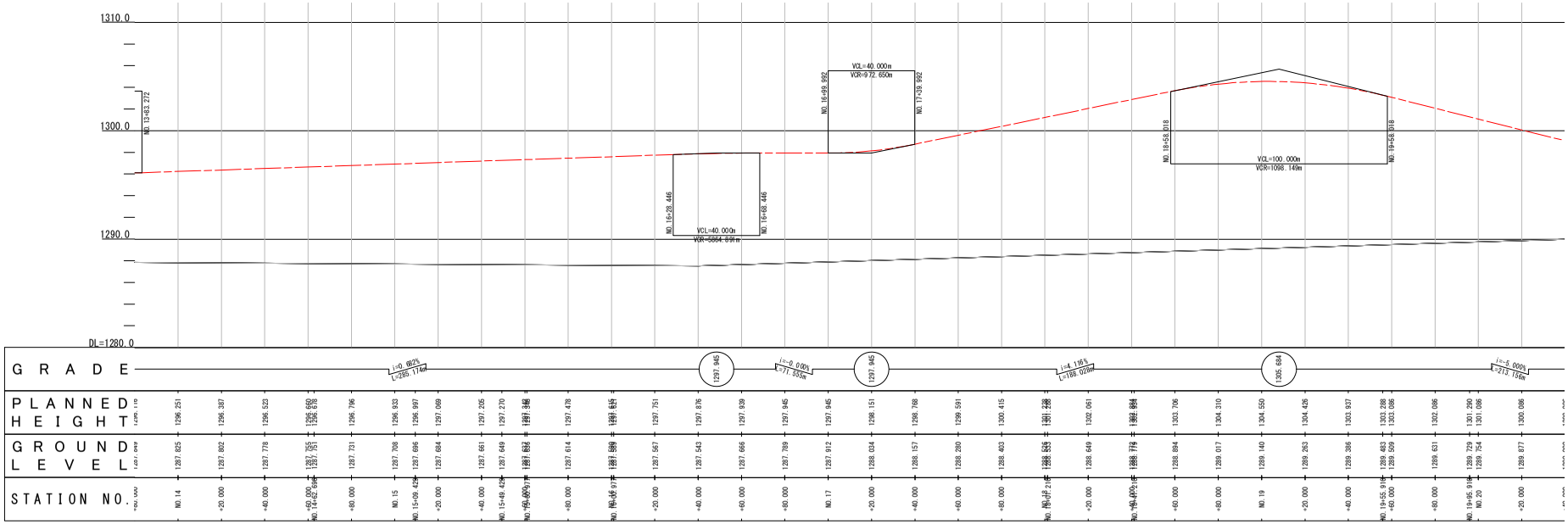


Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	PLAN & PROFILE 3	DWG. NO: R 3

PLAN(5) H=1:1000



PROFILE(5) V=1:200 H=1:1000



Preparatory Survey for Koteshwor Intersection Improvement Project IN FEDERAL DEMOCRATIC REPUBLIC OF NEPAL	MOPIT Ministry of Physical Infrastructure and Transport DOR Department of Road	JICA ORIENTAL CONSULTANTS GLOBAL Co.,Ltd. PADECO Co.,Ltd. CTI Engineering International Co., Ltd.	SCALE: JANUARY 2024	PLAN & PROFILE 5	DWG. NO: R 5