

**GOVERNMENT OF NEPAL
MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT
DEPARTMENT OF ROADS**

**PREPARATORY SURVEY
FOR
NAGDHUNGA TUNNEL
CONSTRUCTION IN NEPAL**

**FINAL REPORT
DRAWINGS**

MARCH 2015

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

**CTI ENGINEERING INTERNATIONAL CO., LTD
TONICHI ENGINEERING CONSULTANTS, INC.
METROPOLITAN EXPRESSWAY CO., LTD.
ORIENTAL CONSULTANTS GLOBAL, CO., LTD.**

4R
CR (3)
15-011 (2)

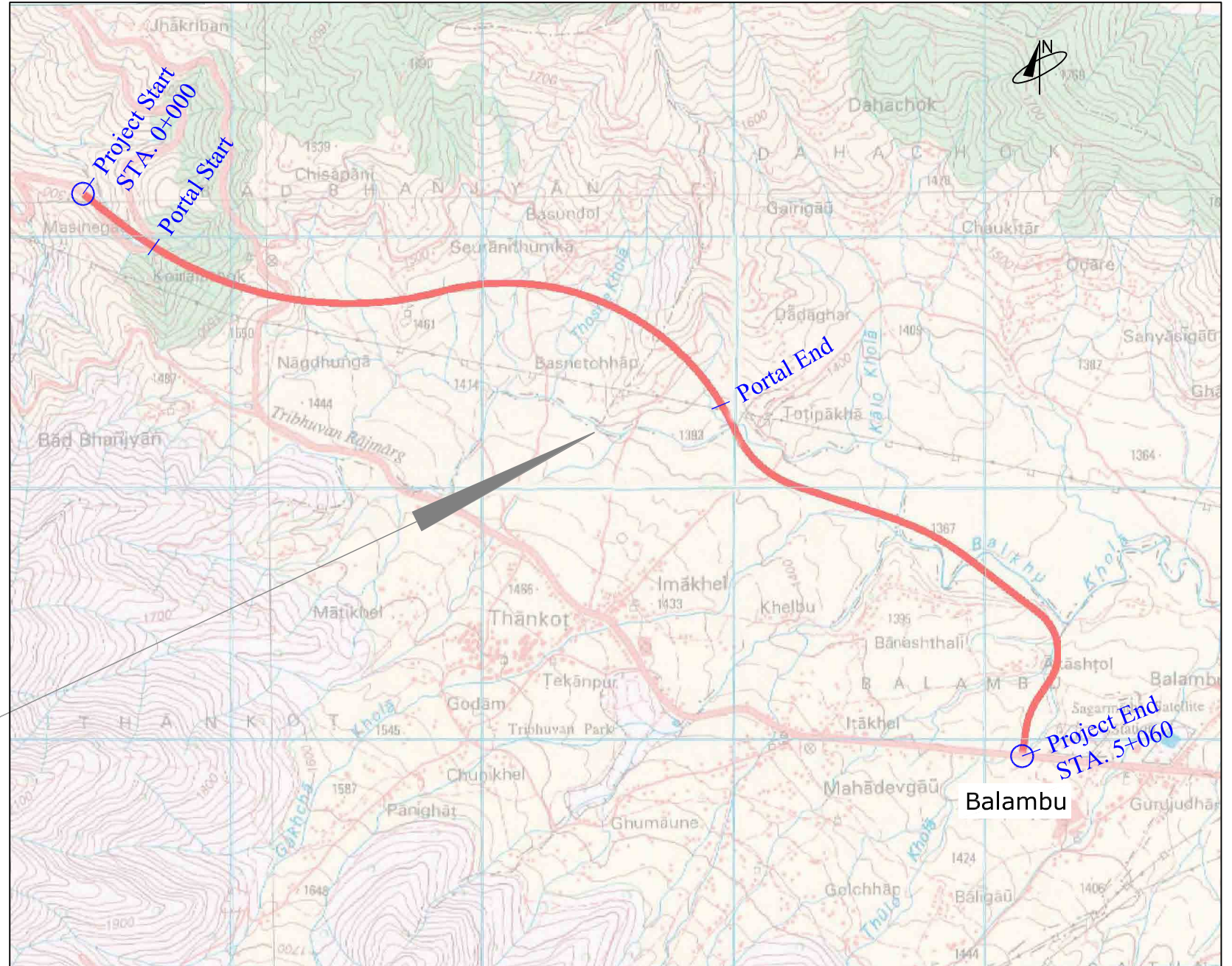
List of Drawings

Title	Sheet Number	Title	Sheet Number
Project Location Map	1	Box Culvert	39-41
Project Location Map in Topo Map	2	Bridge Drawings	42-44
Plan & Profile	3-6	Typical Retaining Walls	45
Geological Plan	7	Traffic Signs and Road Markings	46-47
Tunnel Plan and Profile	8	Traffic Safety	48
Geologic Profile	9	Intersections	49-50
Tunnel Typical Cross Section	10-11	Transmission Line Plan	51
Emergency Parking Bay Plan and Cross Section	12	<u>Appendix</u>	
Tunnel support Pattern	13-16	Geological Plan and Cross Section of West Tunnel Portal	App. 1-2
General Drawing of Tunnel Portal	17-18	Geological Plan and Cross Section of West Tunnel Portal	App. 3-7
Layout of Tunnel Temporary Facilities	19-20	Geological Profile of Approach Road	App. 8
General Drawing of Groundwater Treatment	21	Hydrological Profile and X-Section of Portal	App. 9a,9b,9c,9d
Arrangement of Tunnel Facilities	22	West Portal Drainage Plan	App. 10
Typical Cross Section of Approach Road	23		
Cross section Approach Road	24-34		
West Portal Existing Road Arrangement	35		
East Portal Existing Road Arrangement	36		
Plan and Cross Section of Toll Plaza	37-38		



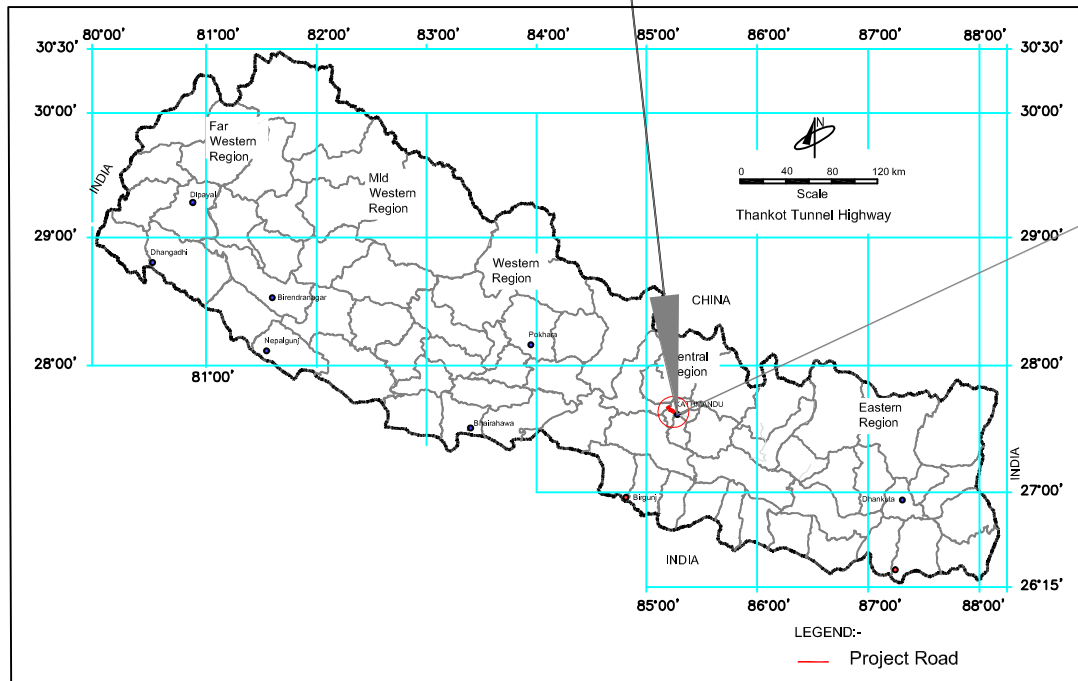
(Source: Google)

South Asia Map









(Source: Survey Department Nepal)

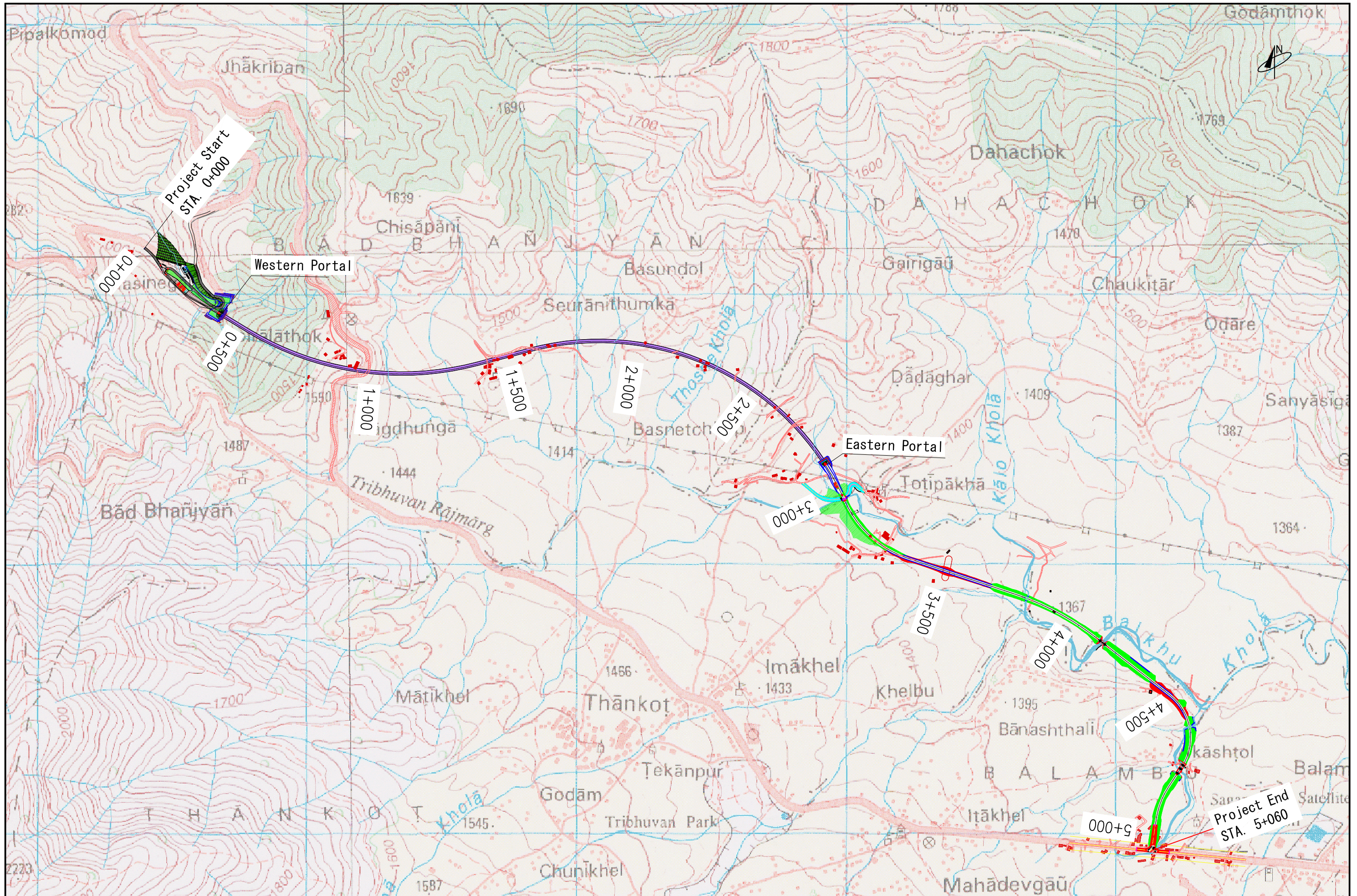
Project Area Map










(Source: Survey Department Nepal)

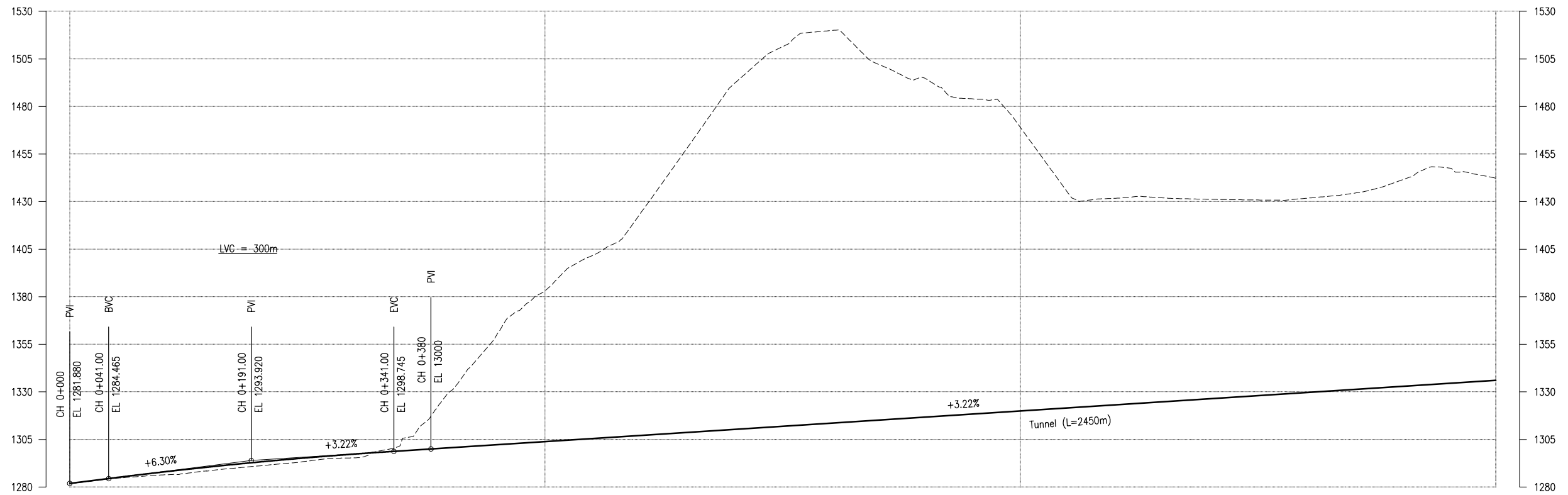
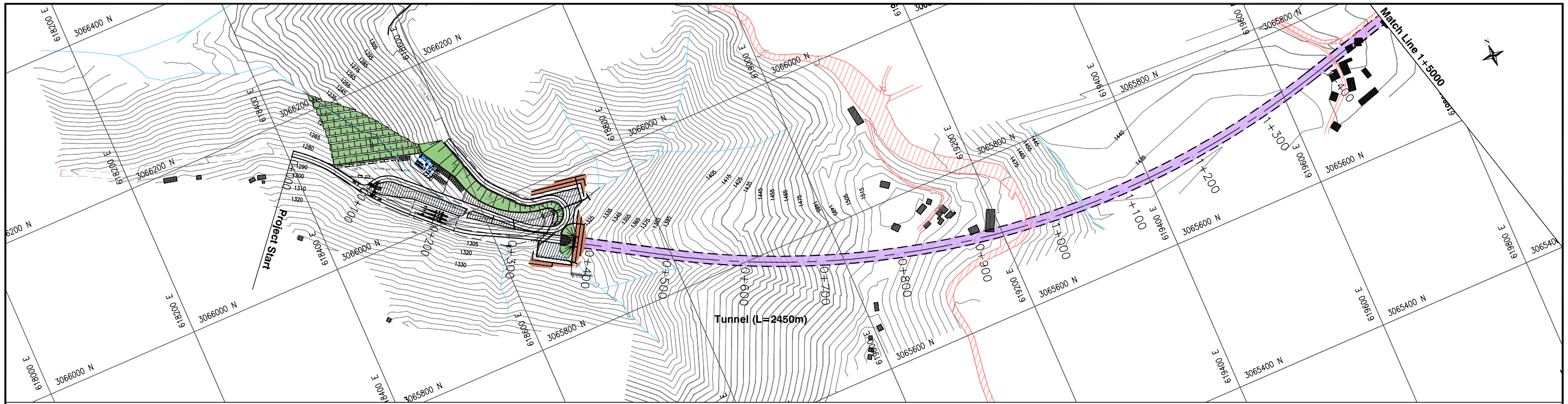
Nepal Map

Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	Preparatory survey for Nagdhunga Tunnel Construction in Nepal	Project Location Map	Not To Scale



Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	Project Location in Topo Map	Scale: 0 125 250 m H = 1:12500	 2

PLAN AND PROFILE



DESIGN LEVEL (m)	1281.880	1288.005	1293.187	1297.340	1300.645	1303.869	1307.093	1310.317	1313.542	1316.766	1319.990	1323.214	1326.438	1329.663	1332.887	1336.111
EXISTING LEVEL (m)	1281.711	1286.405	1291.146	1295.356	1330.194	1383.125	1423.534	1492.426	1519.878	1494.732	1468.979	1431.761	1431.217	1431.732	1441.153	1442.270
CHAINAGE (km)	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000	1+100	1+200	1+300	1+400	1+500

Clients:



Department of Roads
Ministry of Physical Infrastructure and Transport
Federal Democratic Republic of Nepal

Consultants:



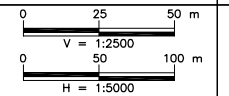
Project Title:

Preparatory survey for
Nagdhunga Tunnel Construction in Nepal

Sheet Contents:

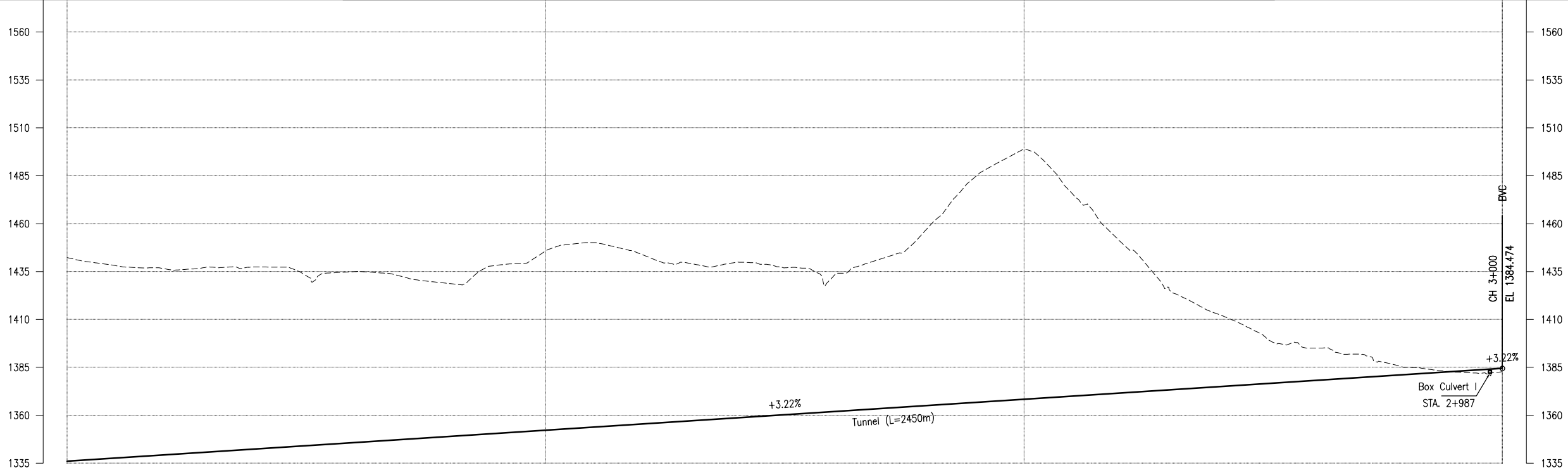
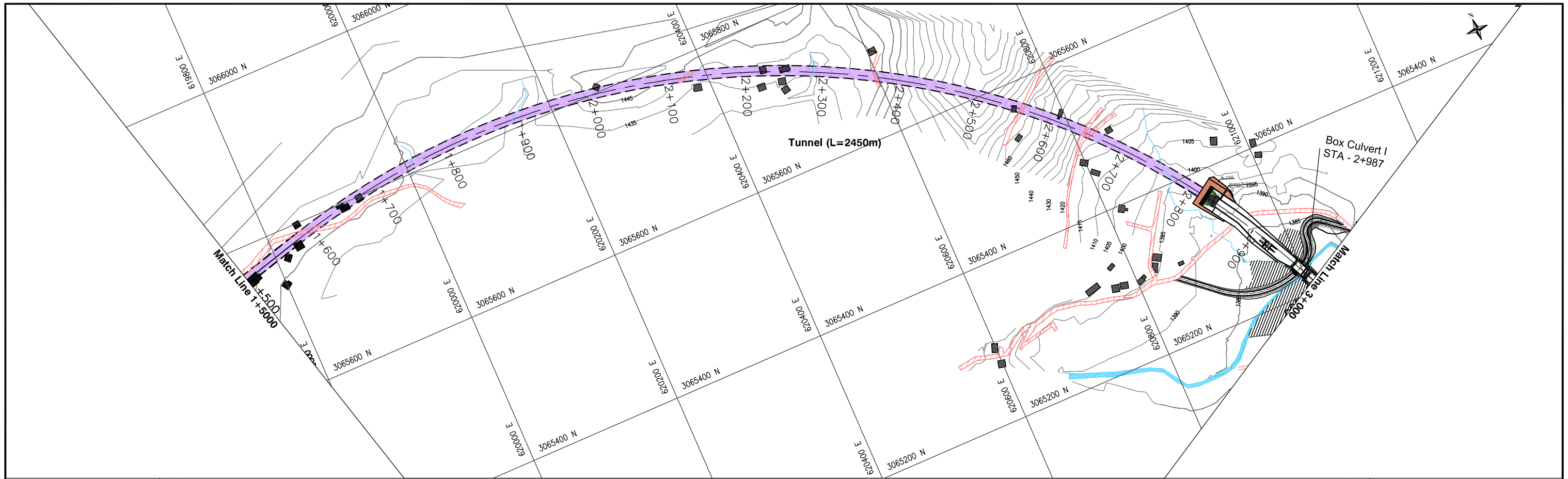
Plan and Profile

Scale:



SHT. NO.

3



DESIGN LEVEL (m)	1336.111	1339.335	1342.559	1345.784	1349.008	1352.232	1355.456	1358.680	1361.905	1365.129	1368.353	1371.577	1374.801	1378.026	1381.250	1384.474
EXISTING LEVEL (m)	1442.270	1436.632	1437.407	1434.958	1428.707	1445.750	1444.053	1439.917	1432.149	1458.114	1499.004	1451.004	1413.290	1395.050	1385.048	1382.776
CHAINAGE (km)	1+500	1+600	1+700	1+800	1+900	2+000	2+100	2+200	2+300	2+400	2+500	2+600	2+700	2+800	2+900	3+000

Clients:



Department of Roads
Ministry of Physical Infrastructure and Transport
Federal Democratic Republic of Nepal

Consultants:

CTI Engineering International Co., Ltd.
Tonichi Engineering Consultants, Inc.
Metropolitan Expressway Co., Ltd.
Oriental Consultants, Co., Ltd.

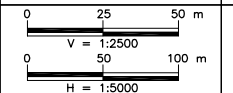
Project Title:

Preparatory survey for
Nagdhunga Tunnel Construction in Nepal

Sheet Contents:

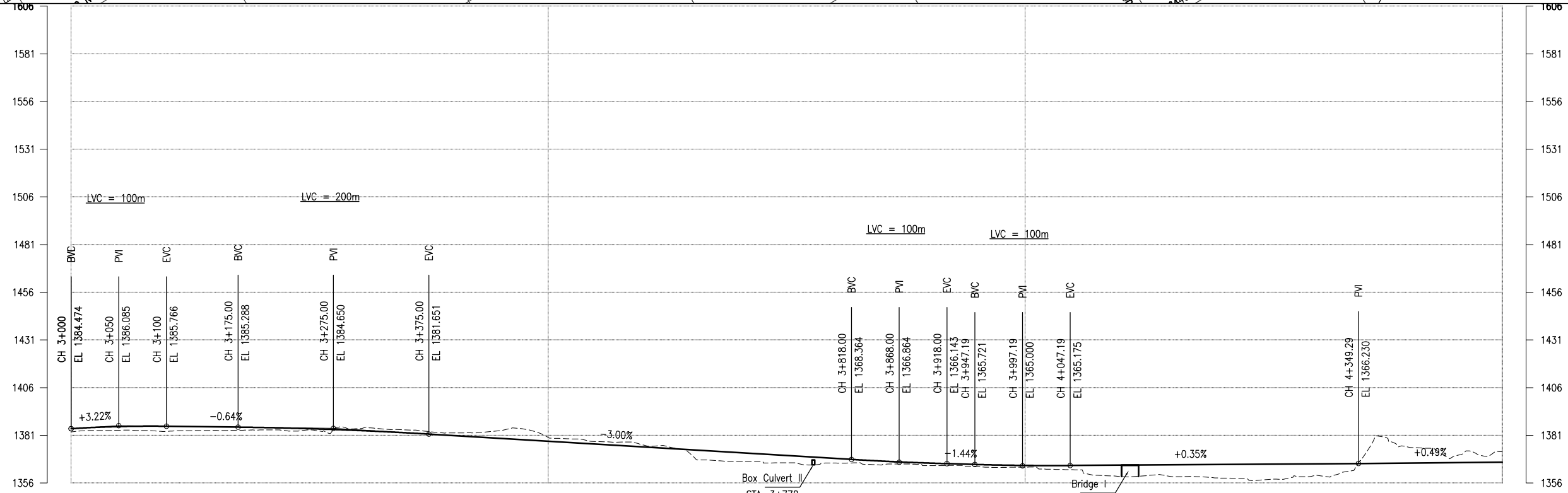
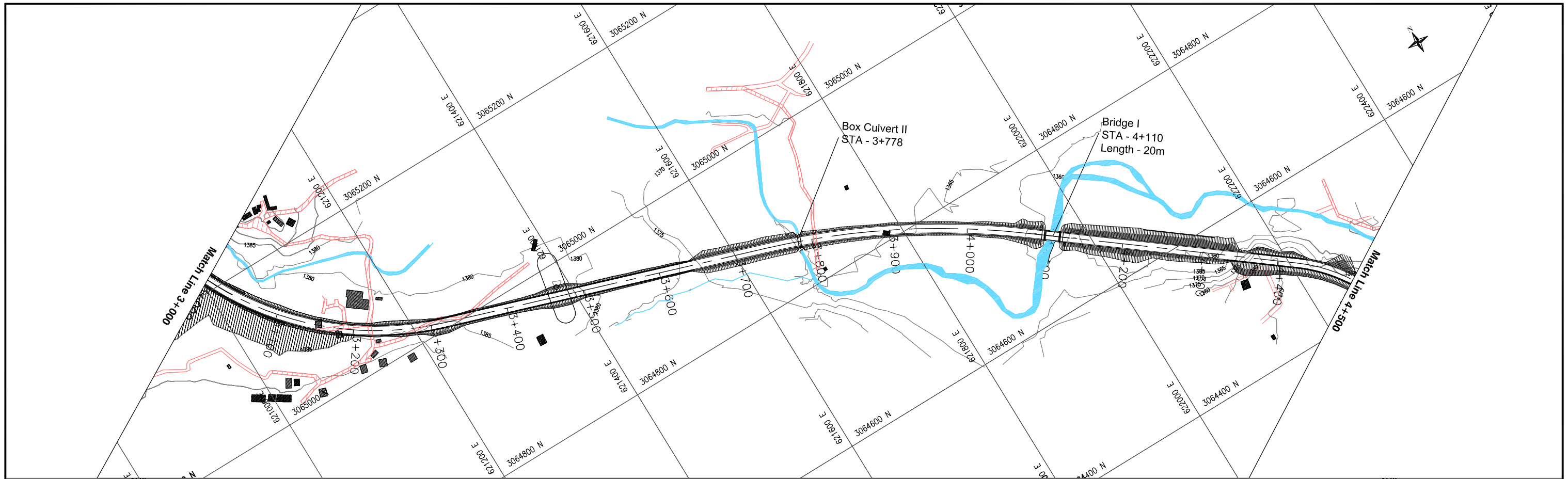
Plan and Profile

Scale:



SHT. NO.

4



CHAINAGE (km)	3+000	3+100	3+200	3+300	3+400	3+500	3+600	3+700	3+800	3+900	4+000	4+100	4+200	4+300	4+400	4+500
DESIGN LEVEL (m)	1384.474	1385.766	1385.091	1385.566	1380.901	1377.902	1374.902	1371.903	1368.904	1366.428	1365.209	1365.359	1365.708	1366.058	1366.478	1366.967
EXISTING LEVEL (m)	1382.776	1385.046	1383.802	1384.522	1382.244	1379.908	1375.880	1367.344	1366.490	1365.105	1364.311	1359.386	1358.665	1359.519	1374.974	1372.430

Clients:



Department of Roads
Ministry of Physical Infrastructure and Transport
Federal Democratic Republic of Nepal

Consultants:

CTI Engineering International Co., Ltd.
Tonichi Engineering Consultants, Inc.
Metropolitan Expressway Co., Ltd.
Oriental Consultants, Co., Ltd.

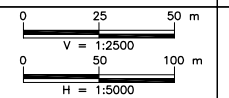
Project Title:

Preparatory survey for
Nagdhunga Tunnel Construction in Nepal

Sheet Contents:

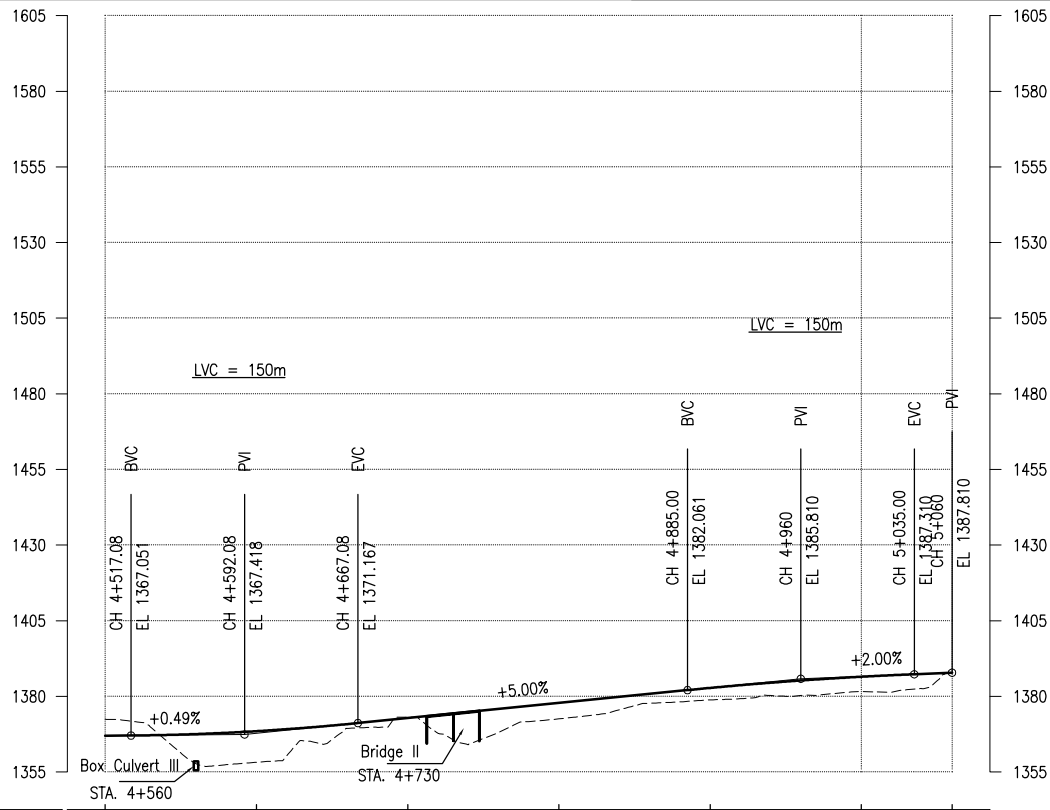
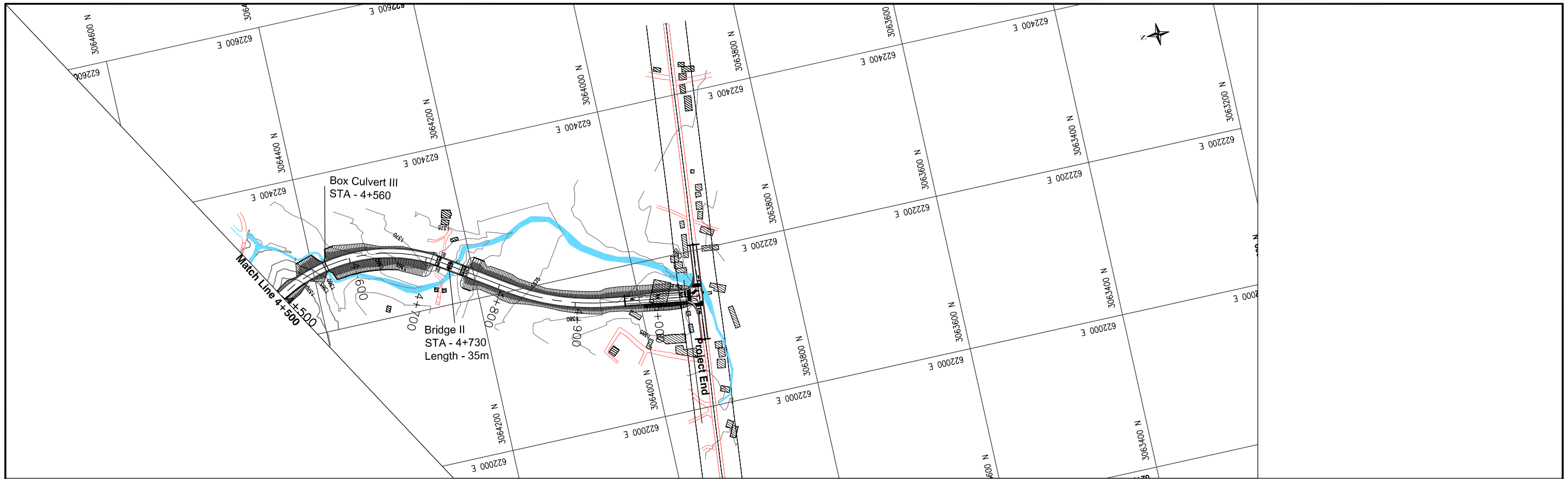
Plan and Profile

Scale:



SHT. NO.

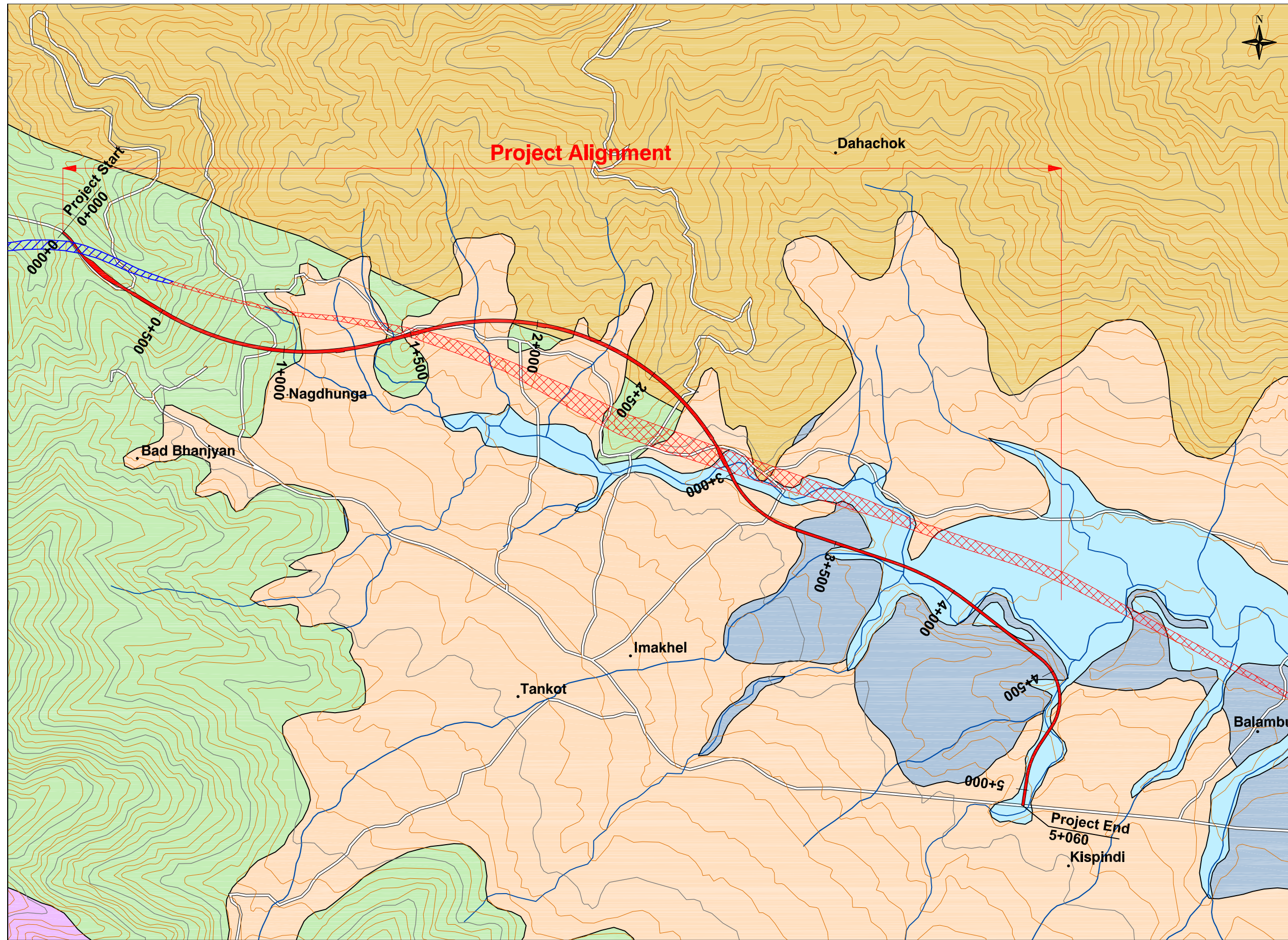
5



HORIZONTAL CURVE DATA TABLE													
IP (no)	COORDINATE		DIST (m)	WCB (deg)	Def. Angle (deg)	Tan. Length (m)	Simple Curve Data						
	Easting (m)	Northing (m)					R (m)	E (m)	LC (m)	BC of Simple Curve (m)	MC (m)	EC of Simple Curve (m)	IP (m)
1	618406.631	3066159.11	0.00	130.0481	0.00	0.00	0	0.00	0.00	0+000.00	0+000.00	0+000.00	0+000.00
2	618437.452	3066133.204	40.26	148.0783	18.03	23.80	150	1.88	47.21	0+016.46	0+040.06	0+063.66	0+040.26
3	618480.247	3066064.509	80.94	133.9426	14.13	52.07	420	3.22	103.61	0+068.72	0+120.53	0+172.33	0+120.79
4	618566.906	3065980.991	120.35	117.6638	16.28	21.45	150	1.53	42.62	0+219.16	0+240.47	0+261.77	0+240.61
5	618634.803	3065945.399	76.66	121.2914	3.63	25.33	800	0.40	50.64	0+291.65	0+316.97	0+342.29	0+316.98
6	618687.96	3065913.09	62.21	121.2897	0.00	0.00	0	0.00	0.00	0+379.17	0+379.17	0+379.17	0+379.17
7	619188.792	3065608.703	586.08	75.154	46.13	468.45	1100	95.59	885.72	0+496.80	0+939.66	1+382.52	0+965.25
8	620655.65	3065997.524	1517.52	155.845	80.69	849.41	1000	312.06	1408.30	1+582.18	2+286.33	2+990.48	2+431.59
9	621074.948	3065062.579	1024.66	108.4954	47.35	170.99	390	35.84	322.30	2+994.74	3+155.89	3+317.04	3+165.73
10	621798.21	3064820.644	762.65	127.8294	19.33	170.32	1000	14.40	337.40	3+738.38	3+907.08	4+075.78	3+908.70
11	622355.428	3064387.963	705.48	213.5287	85.70	185.52	200	72.79	299.14	4+425.43	4+575.00	4+724.57	4+610.95
10	622168.551	3064105.93	338.33	188.4365	25.09	66.76	300	7.34	131.37	4+810.62	4+876.31	4+941.99	4+877.38
11	622141.443	3063923.161	184.77	0	0.00	0.00	0	0.00	0.00	5+060.00	5+060.00	5+060.00	5+060.00

DESIGN LEVEL (m)	1366.967	1368.490	1372.813	1377.812	1382.788	1386.488	1387.810
EXISTING LEVEL (m)	1372.430	1358.221	1373.145	1372.576	1378.808	1381.615	1387.898
CHAINAGE (km)	4+500	4+600	4+700	4+800	4+900	5+000	5+060

Tunnel Co-ordinates				
Easting	Northing	Design Level	Chainage	Remarks
618688.669	3065912.659	1300	0+380.00	West Portal
620926.136	3065363.038	1378.993	2+830.00	East Portal



Clients:



Department of Roads
Ministry of Physical Infrastructure and Transport
Federal Democratic Republic of Nepal

Consultants:



Project Title:

Preparatory survey for
Nagdhunga Tunnel Construction in Nepal

Sheet Contents:

Geological Plan

Scale:

1:15000

SHT. NO.

7