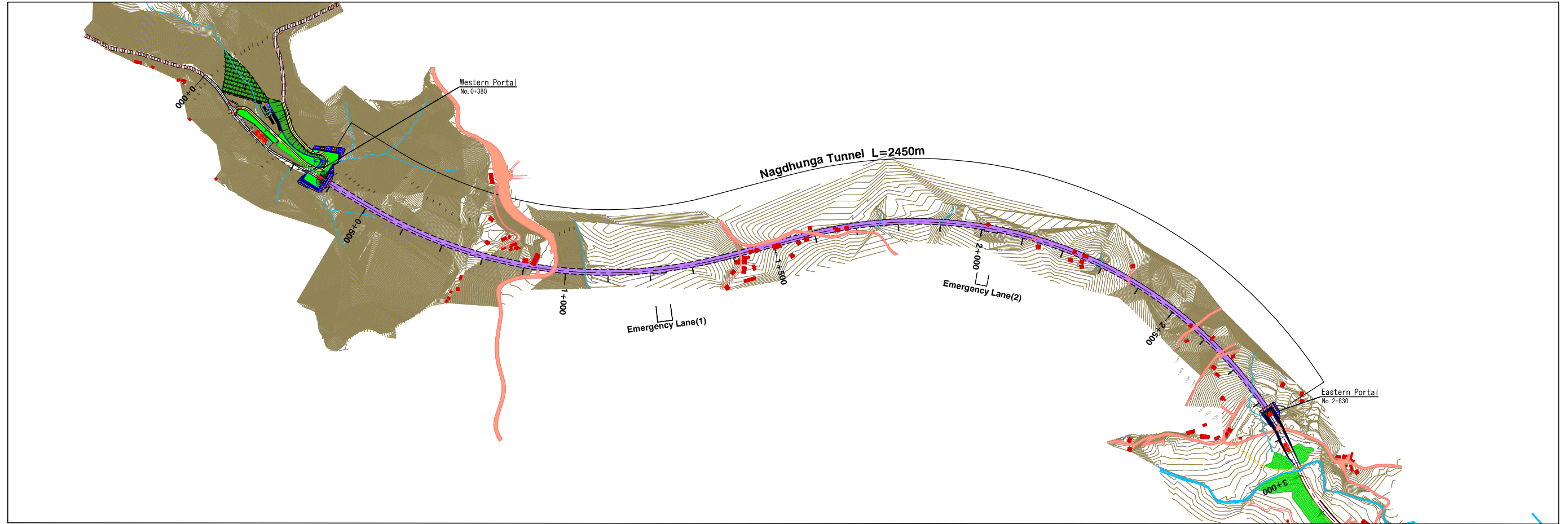
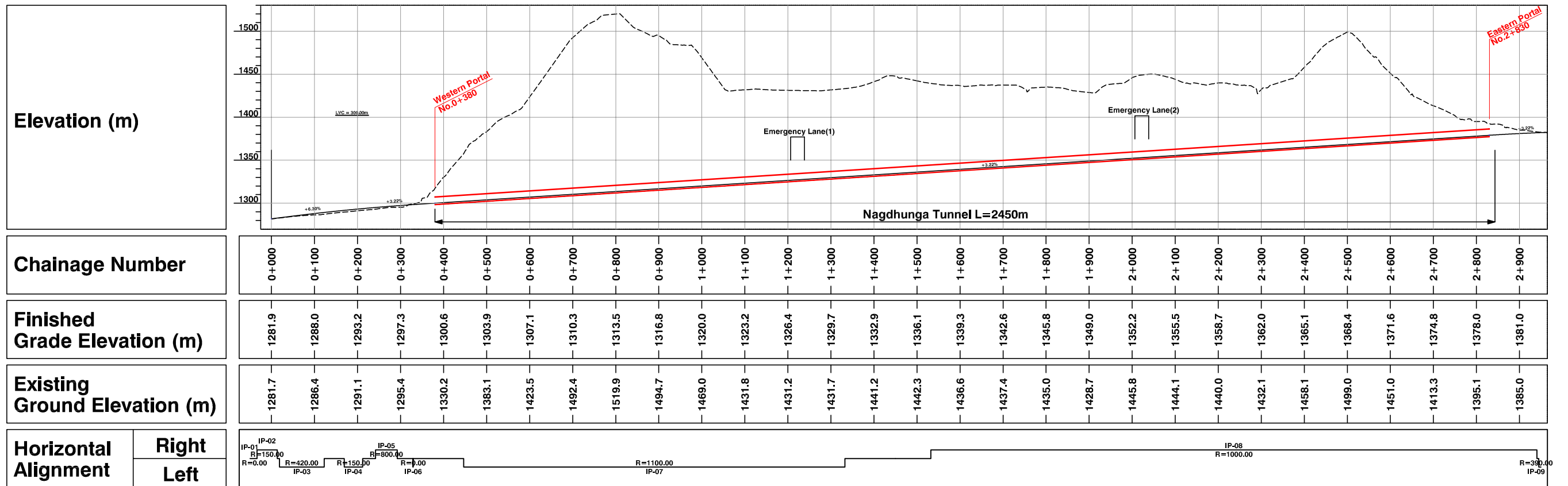


TUNNEL

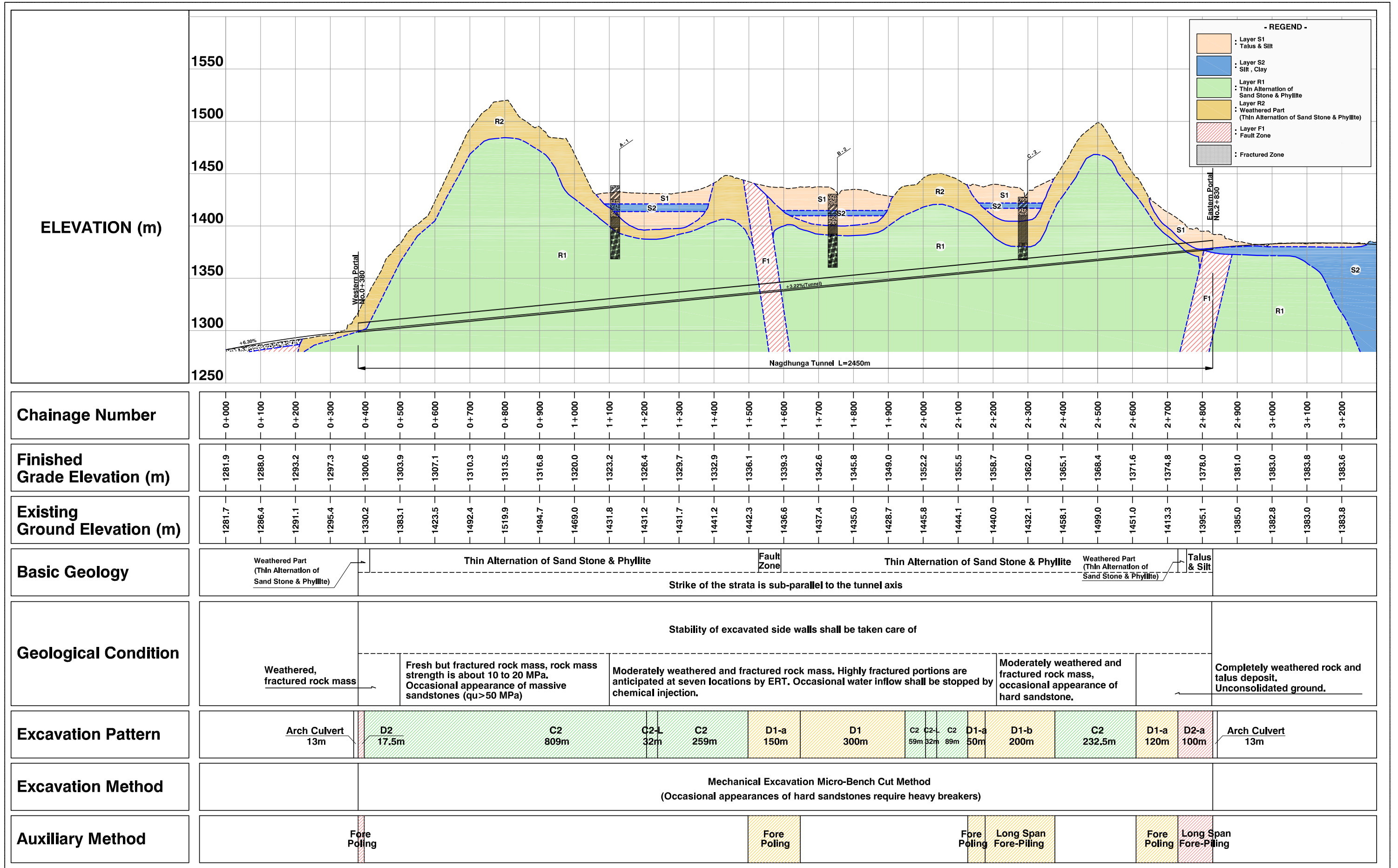
Tunnel Plan (1:10000)

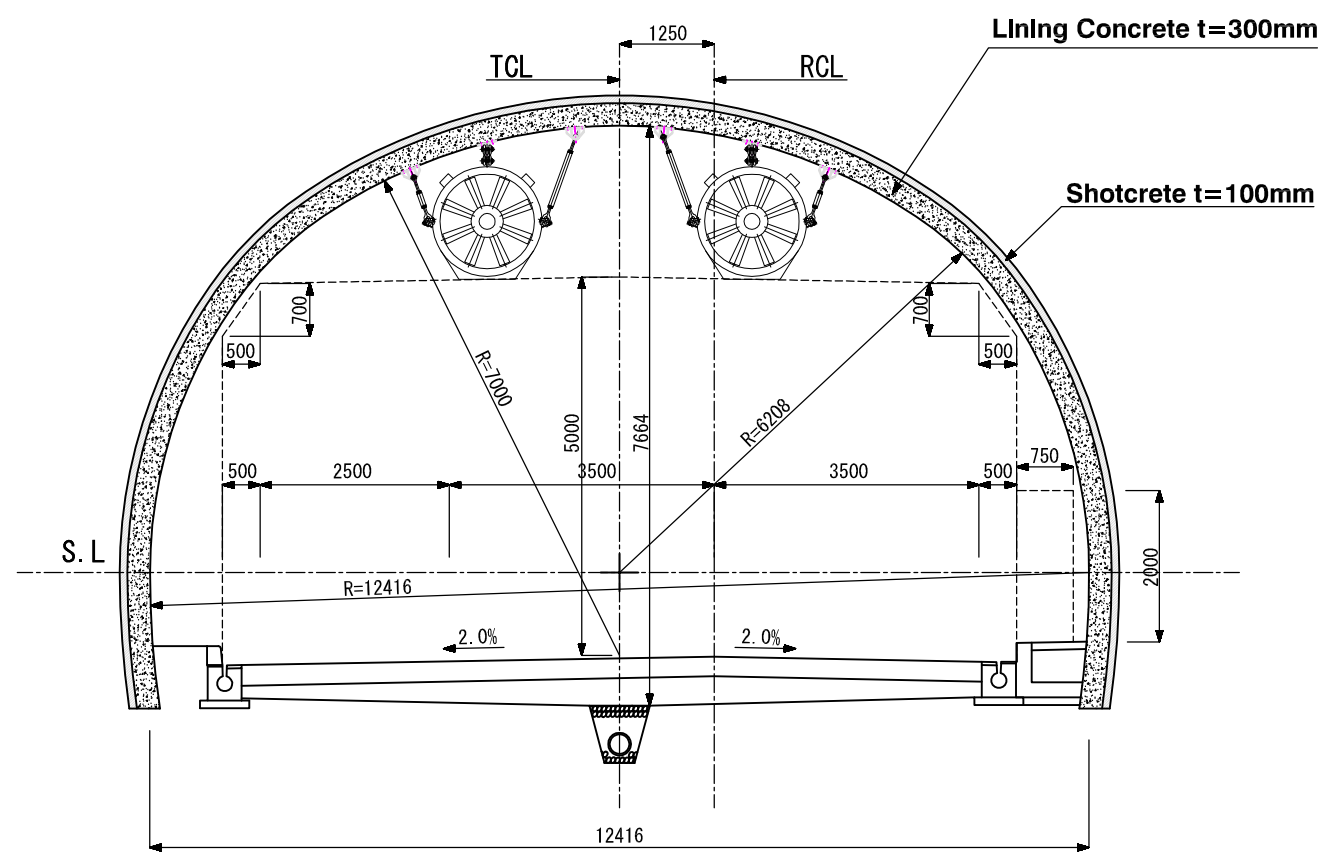


Tunnel Profile (H=1:1000, V=1:5000)



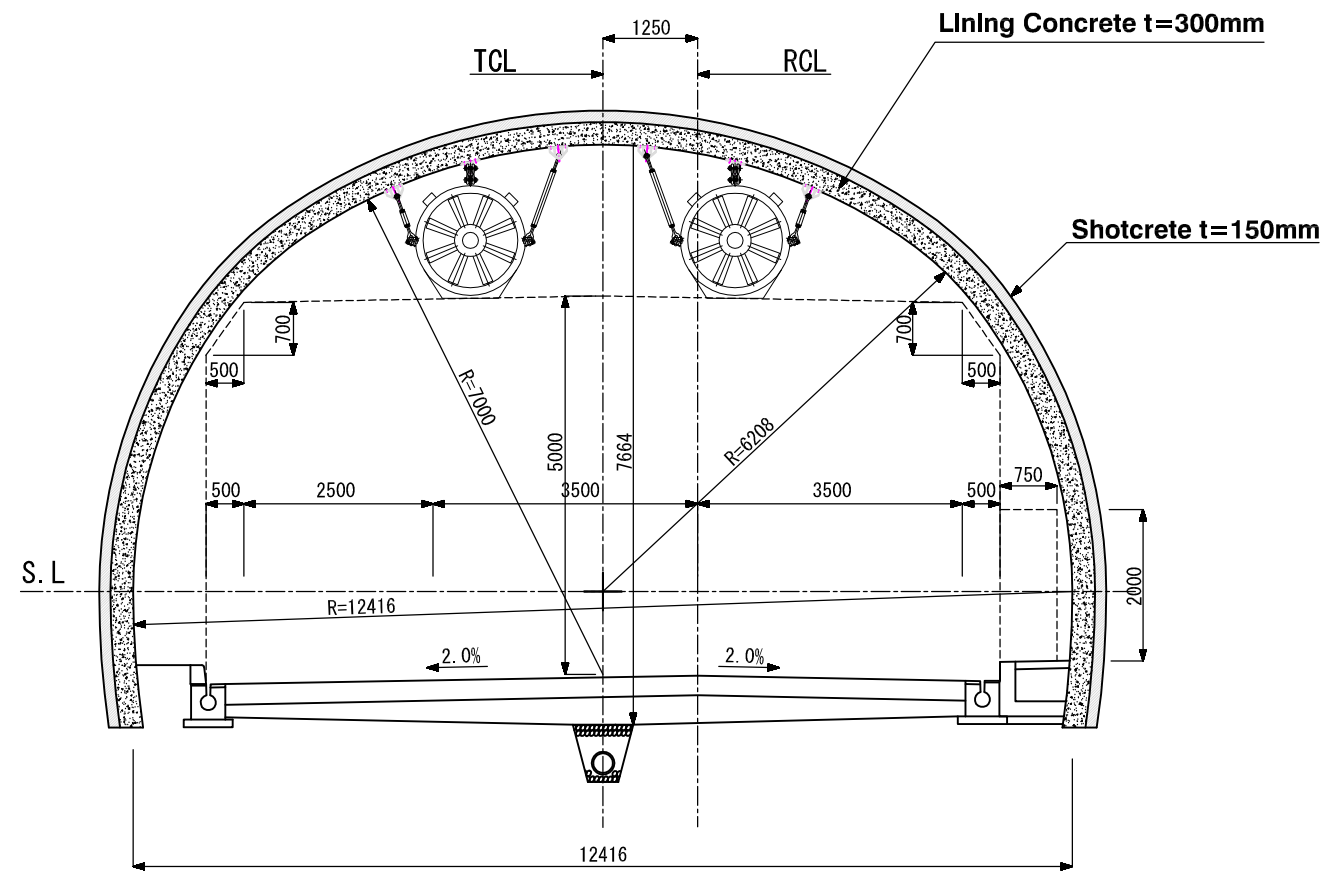
Clients:	Japan International Cooperation Agency Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	Consultants:	CTI Engineering International Co., Ltd. Tonichi Engineering Consultants, Inc. Metropolitan Expressway Co., Ltd. Oriental Consultants, Co., Ltd.	Project Title:	Preparatory survey for Nagdhunga Tunnel Construction in Nepal	Sheet Contents:	Tunnel Plan and Profile	Scale:	As Shown	SHT. NO.	8
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Cross Section Type C2

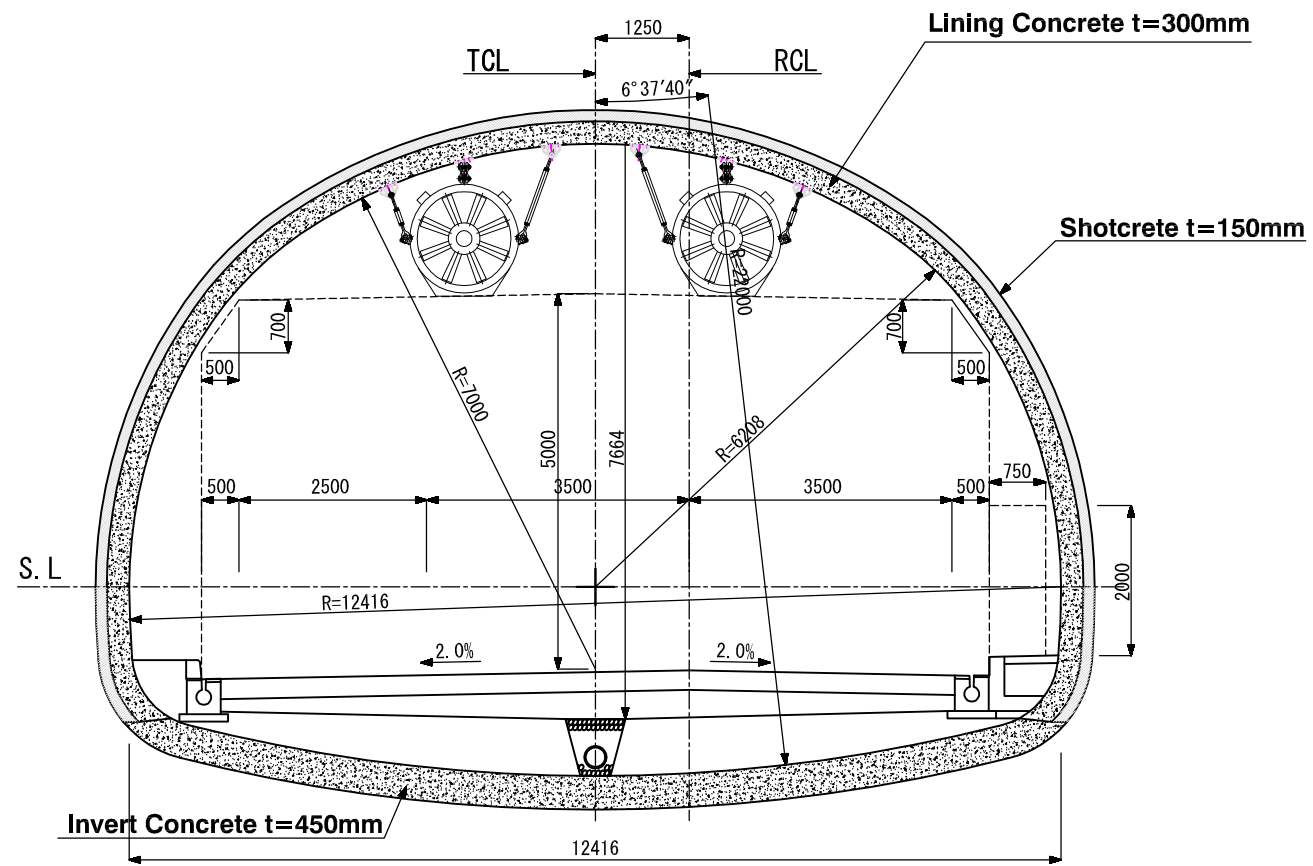
Internal Area = 79.71m ²	Shotcrete Area = 2.39m ²
Excavation Area = 89.16m ²	Lining Area = 6.98m ²



Cross Section Type D1

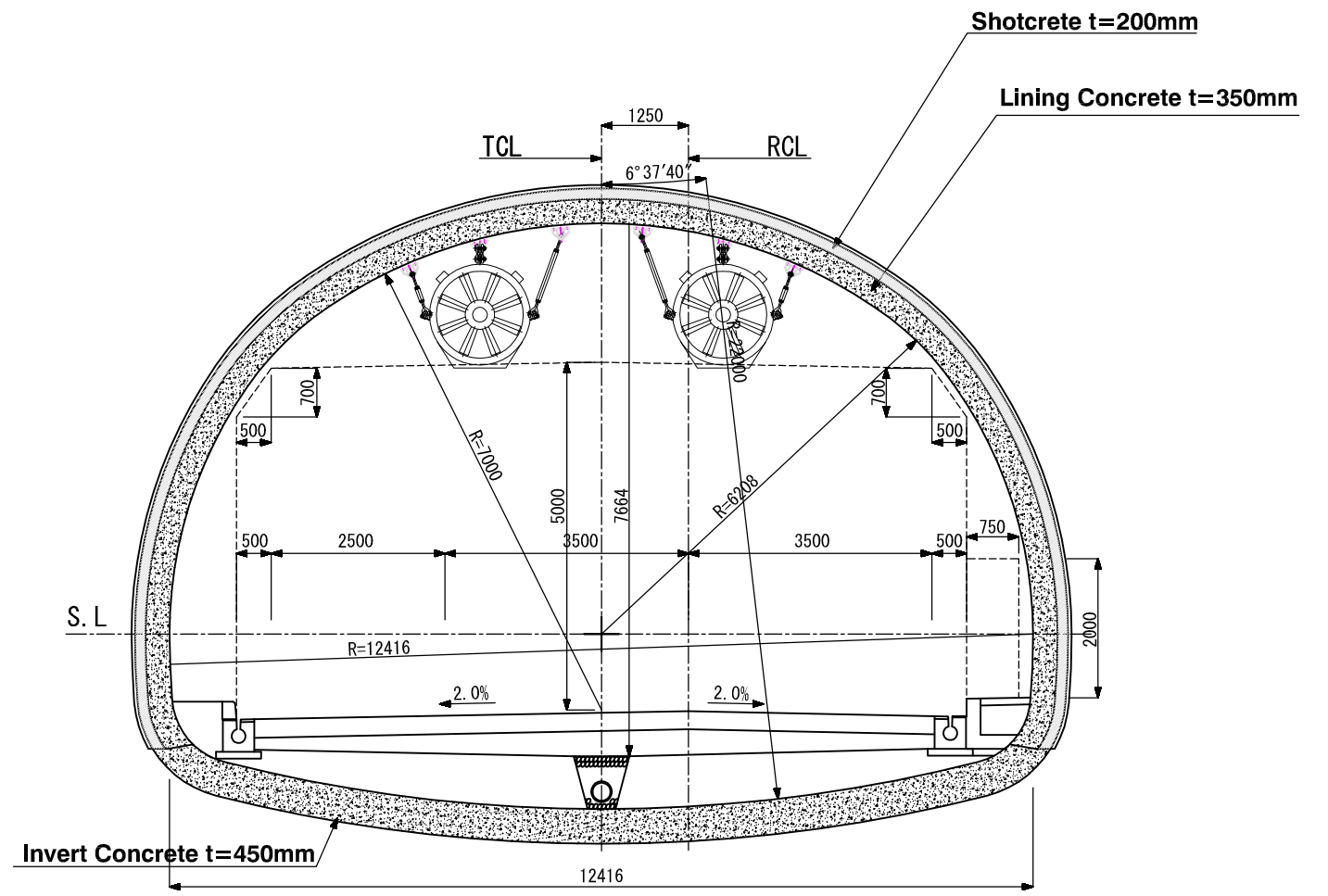
Internal Area = 79.71m ²	Shotcrete Area = 3.59m ²
Excavation Area = 91.26m ²	Lining Area = 6.98m ²

Clients: Japan International Cooperation Agency	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: Tunnel Typical Cross Section (1)	Scale: 1:1000	SHT. NO. 10
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Cross Section Type D1-a, D1-b

Internal Area = 85.80m ²	Shotcrete Area = 3.61m ²
Excavation Area (Arch) = 89.25m ²	Lining Area (Arch) = 6.94m ²
Excavation Area (Invert) = 12.72m ²	Lining Area (Invert) = 5.67m ²

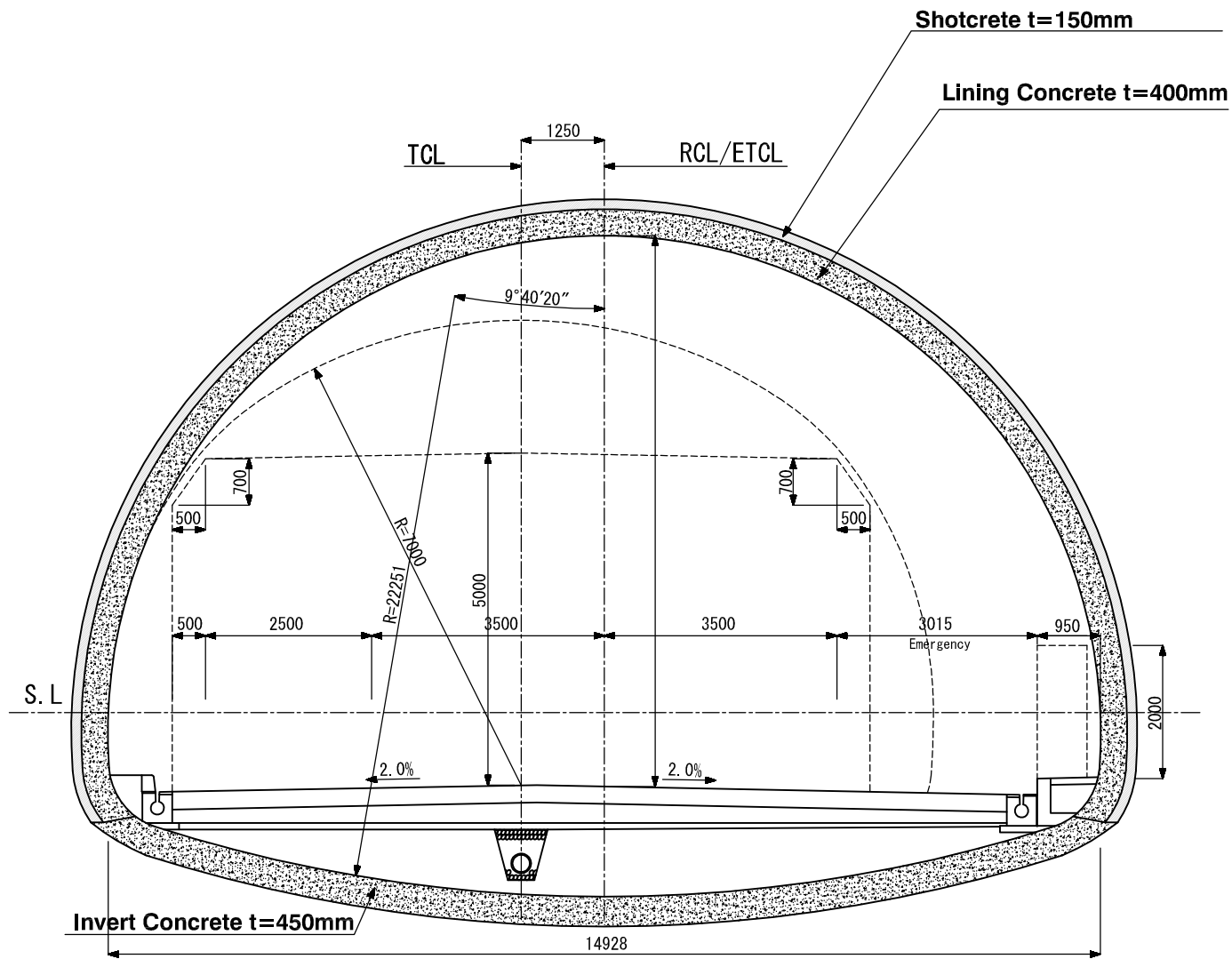


Cross Section Type D2, D2-a

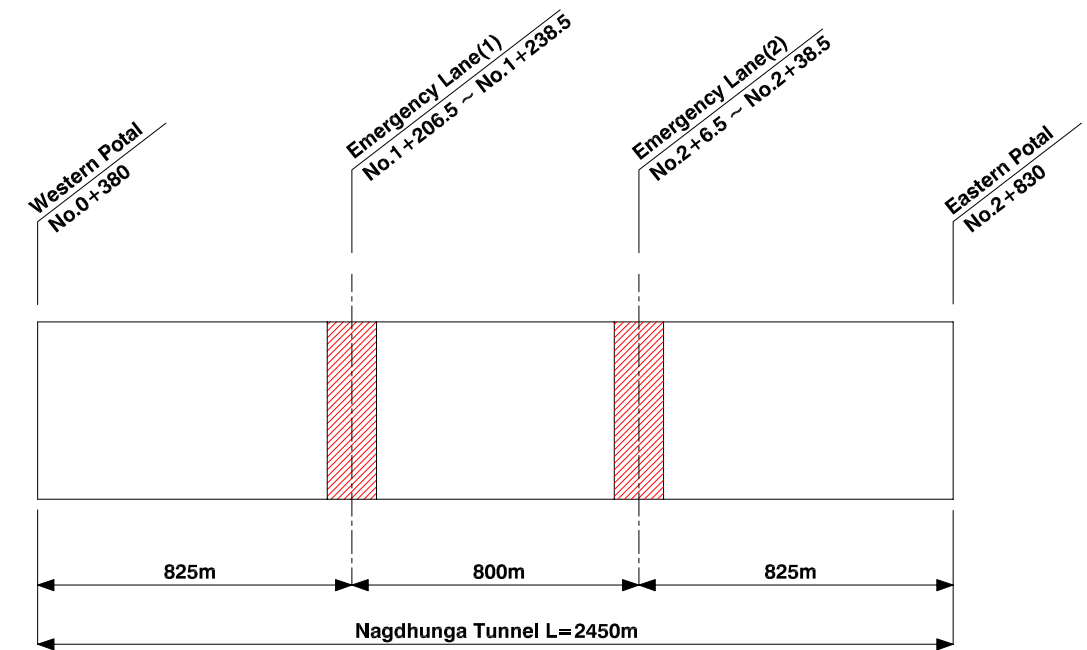
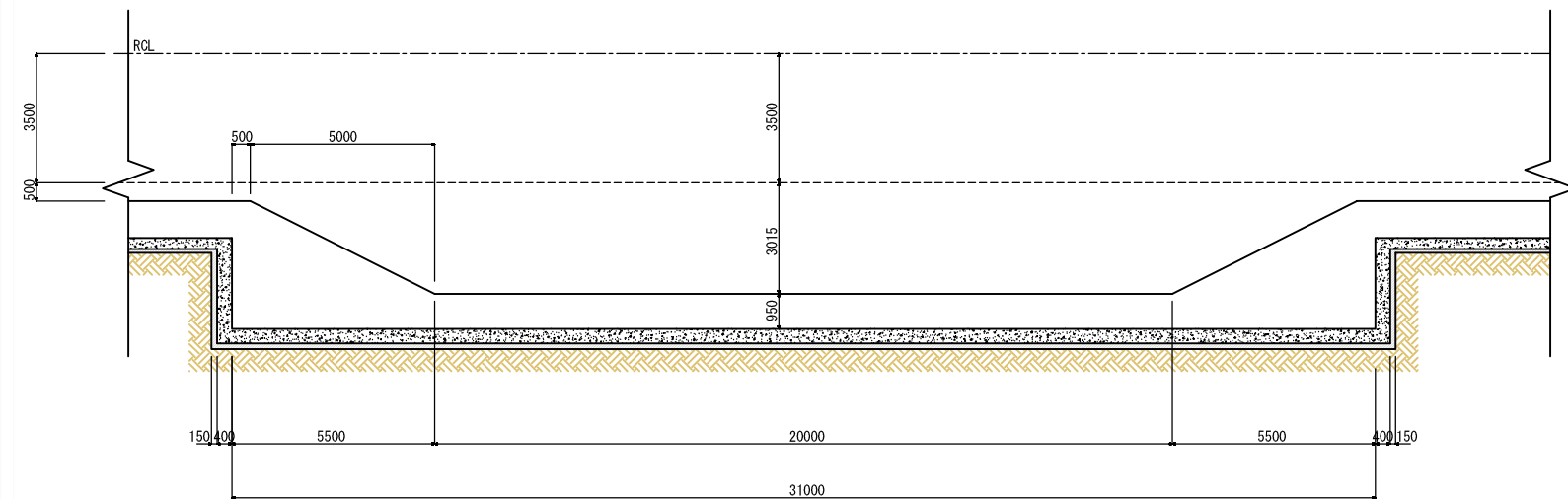
Internal Area = 85.80m ²	Shotcrete Area = 4.79m ²
Excavation Area (Arch) = 91.67m ²	Lining Area (Arch) = 8.13m ²
Excavation Area (Invert) = 13.39m ²	Lining Area (Invert) = 6.34m ²






Clients: Japan International Cooperation Agency	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: Tunnel Typical Cross Section (2)	Scale: 1:1000	SHT. NO. 11
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Cross Section C2-L (1:1000)

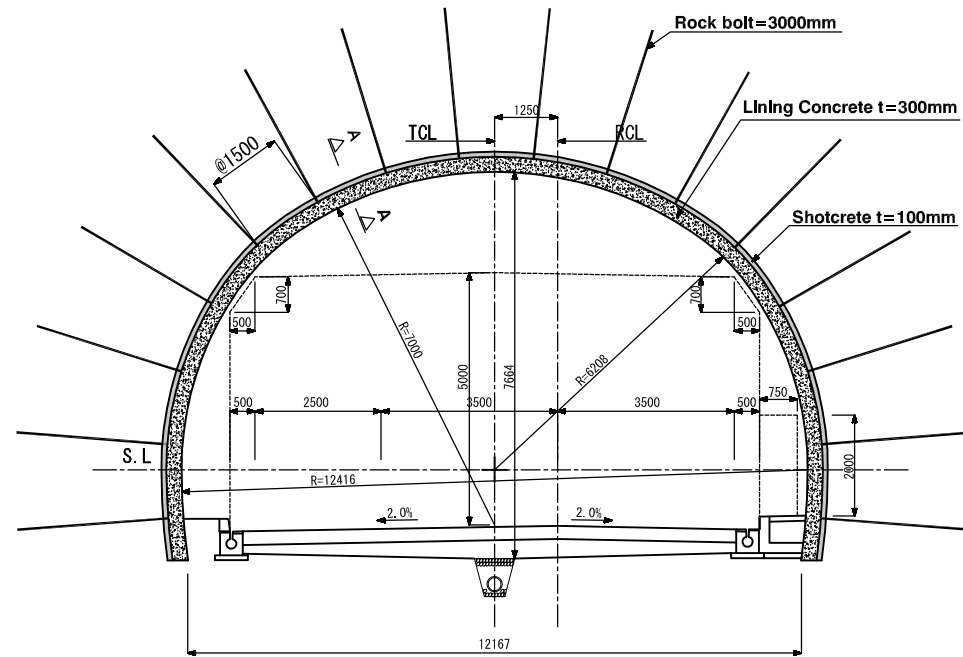


Plan - Right Side - (1:2000)

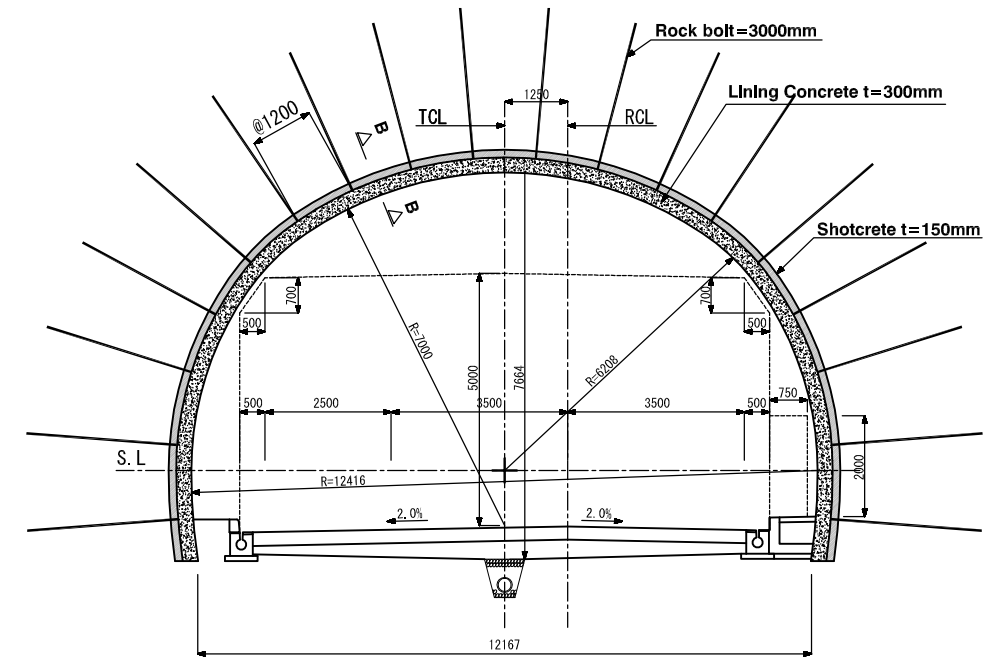


<p>Clients:</p>  Japan International Cooperation Agency	<p>Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal</p>	<p>Consultants:</p>  CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	<p>Project Title:</p> Preparatory survey for Nagdhunga Tunnel Construction in Nepal	<p>Sheet Contents:</p> Emergency Parking Bay Plan and Cross Section	<p>Scale:</p> As Shown	<p>SHT. NO.</p> 12
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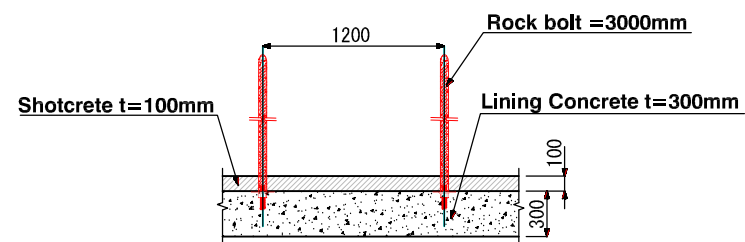
Tunnel Pattern C2 (1:1500)



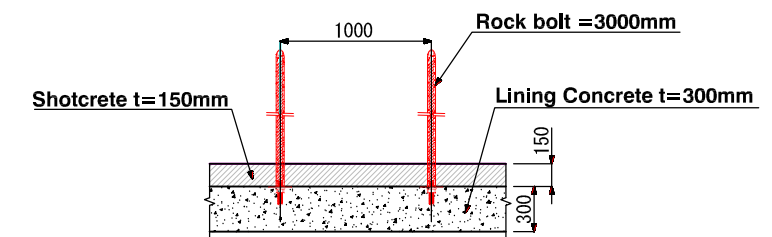
Tunnel Pattern D1 (1:1500)





Section A-A (1:500)

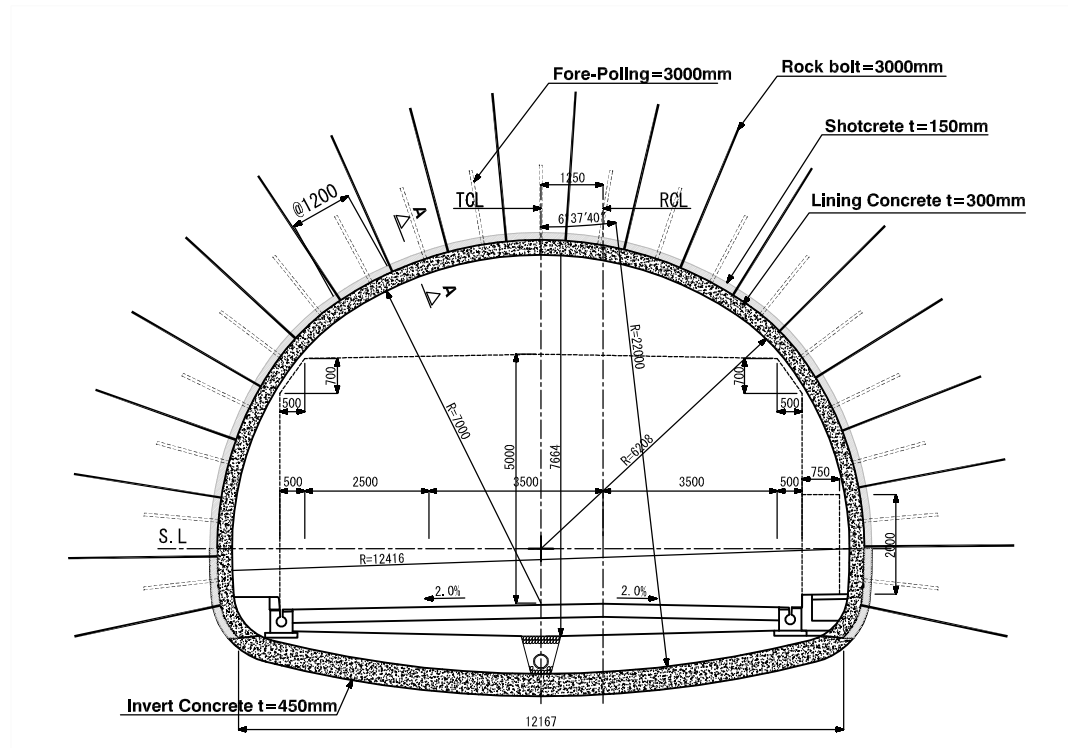


Section B-B (1:500)

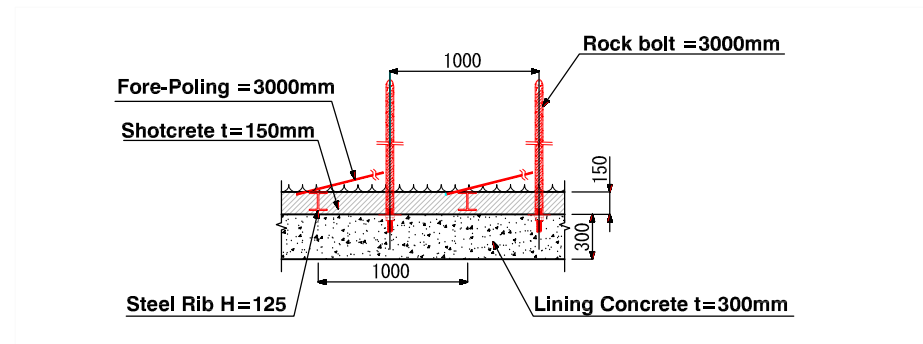


Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	CTI Engineering International Co., Ltd. Tonichi Engineering Consultants, Inc. Metropolitan Expressway Co., Ltd. Oriental Consultants, Co., Ltd.	Preparatory survey for Nagdhunga Tunnel Construction in Nepal	Tunnel Support Pattern (1)	As Shown

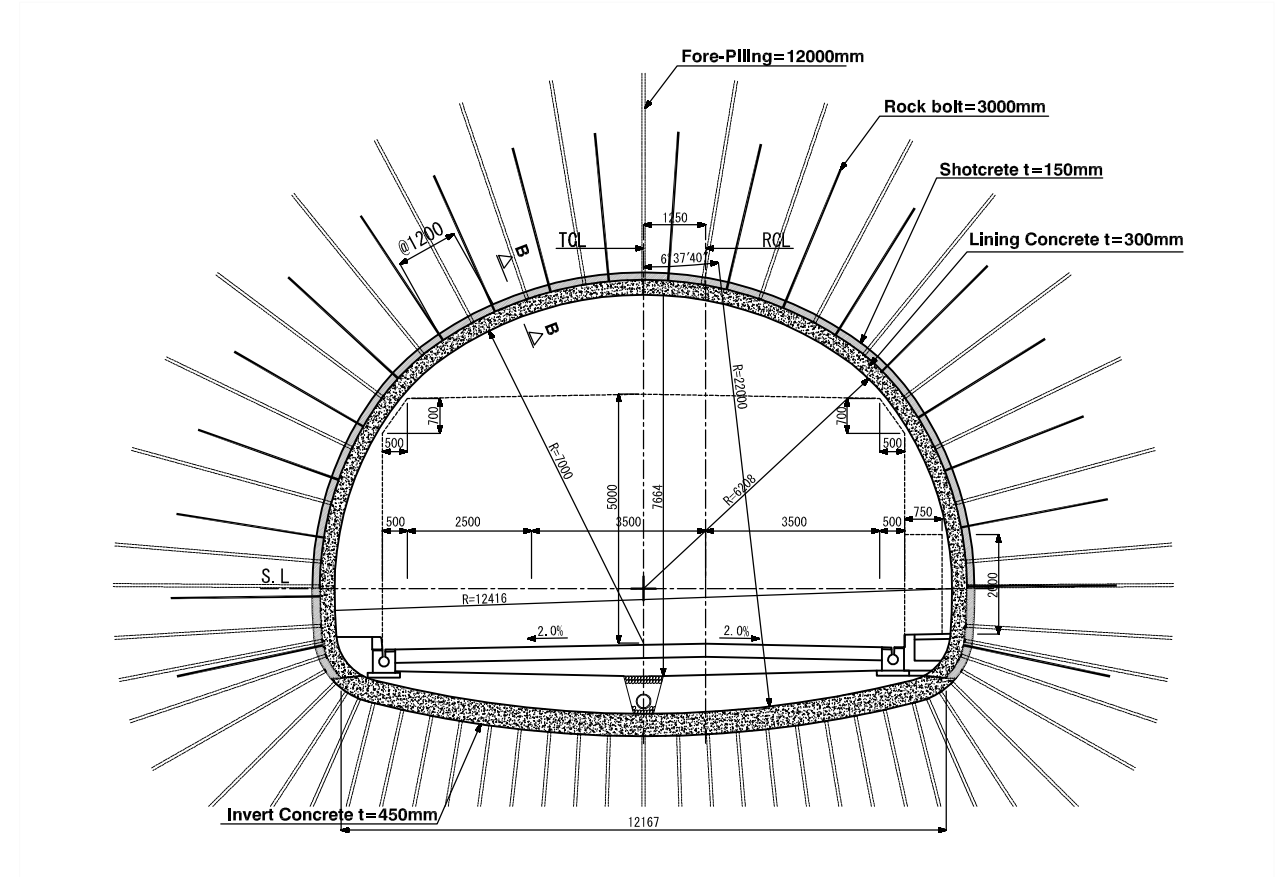
Tunnel Pattern D1-a (1:1500)



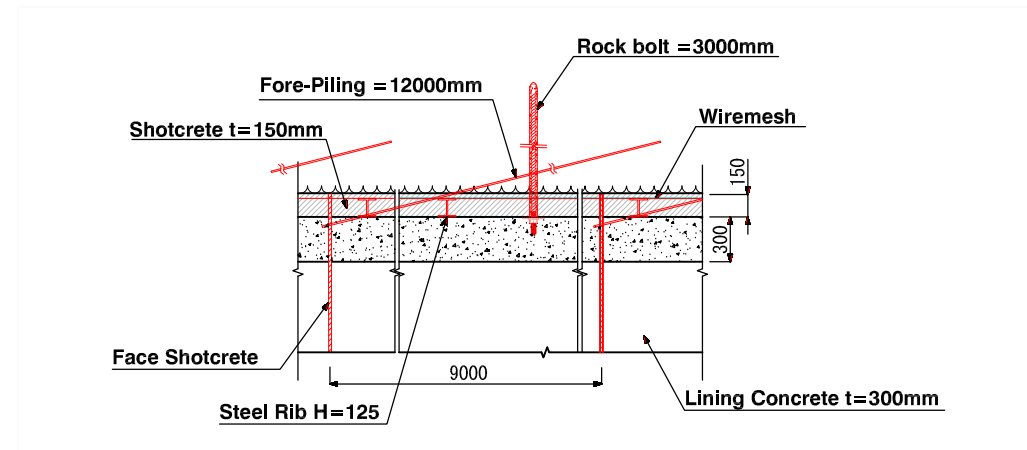
Section A-A (1:500)








Tunnel Pattern D1-b (1:1500)

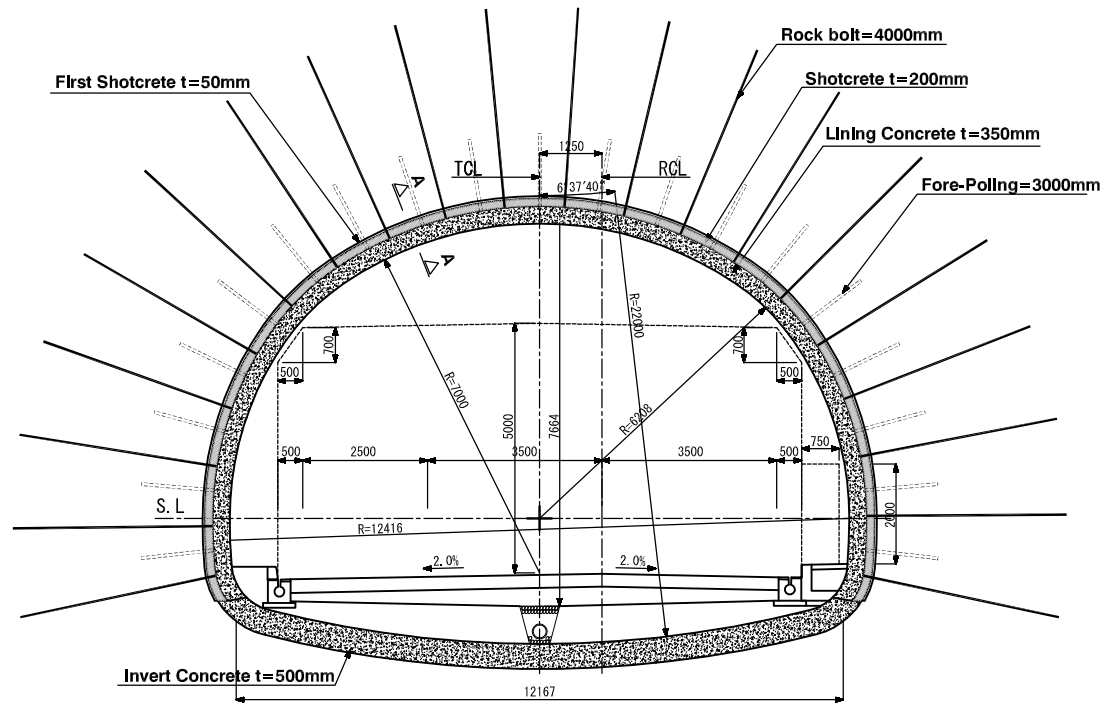


Section B-B (1:500)

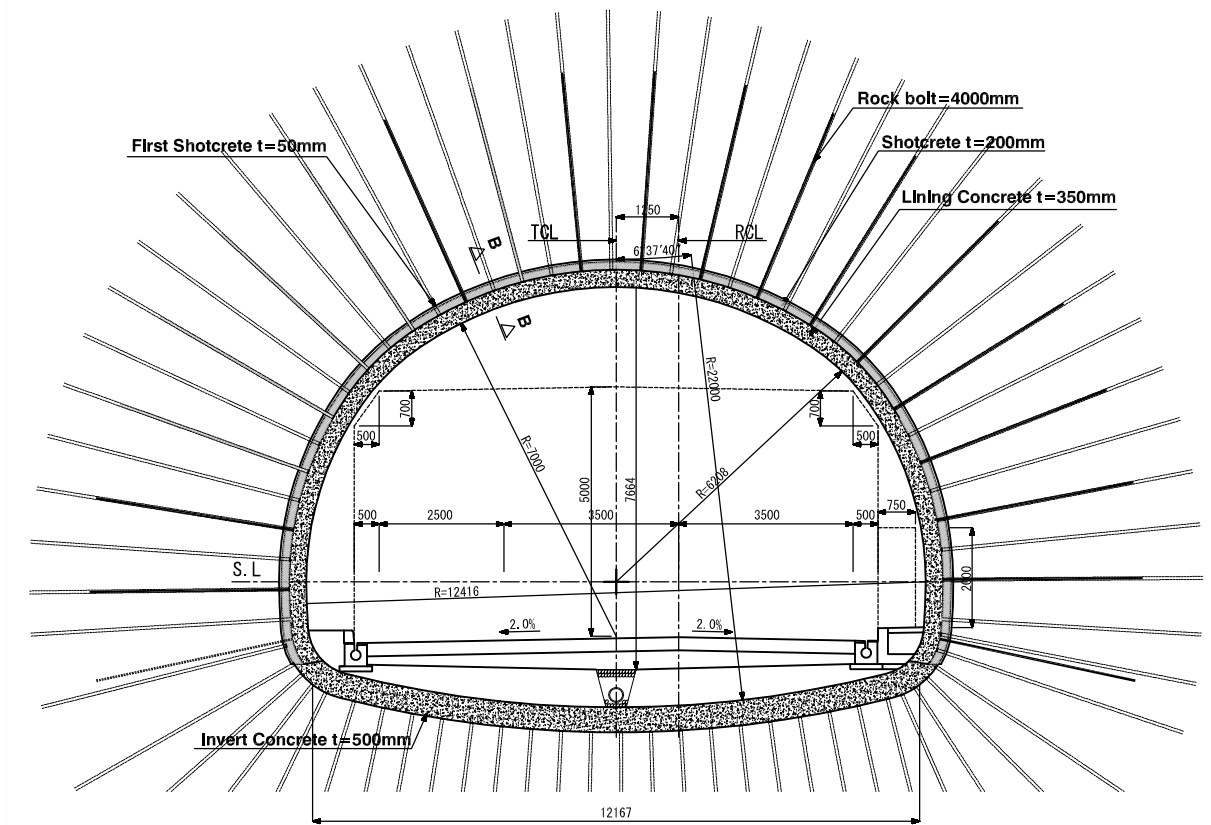


<p>Clients:</p>  Japan International Cooperation Agency	<p>Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal</p>	<p>Consultants:</p>  CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	<p>Project Title:</p> Preparatory survey for Nagdhunga Tunnel Construction in Nepal	<p>Sheet Contents:</p> Tunnel Support Pattern (2)	<p>Scale:</p> As Shown	<p>SHT. NO.</p> 14
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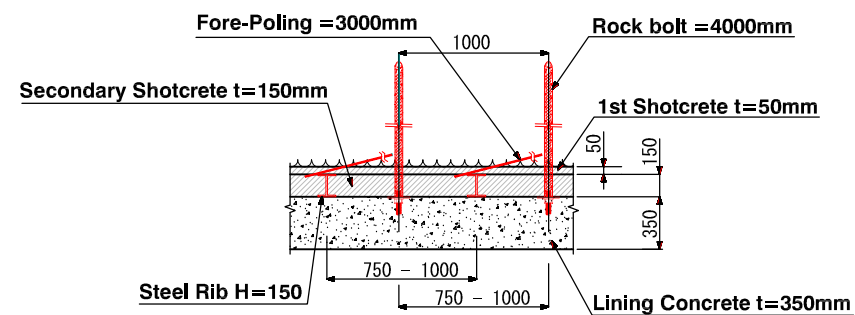
Tunnel Pattern D2 (1:1500)



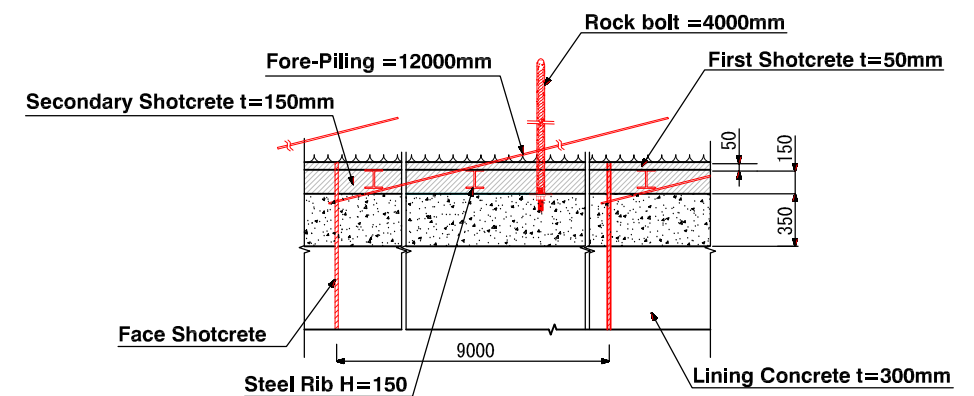
Tunnel Pattern D2-a (1:1500)









Section A-A (1:500)

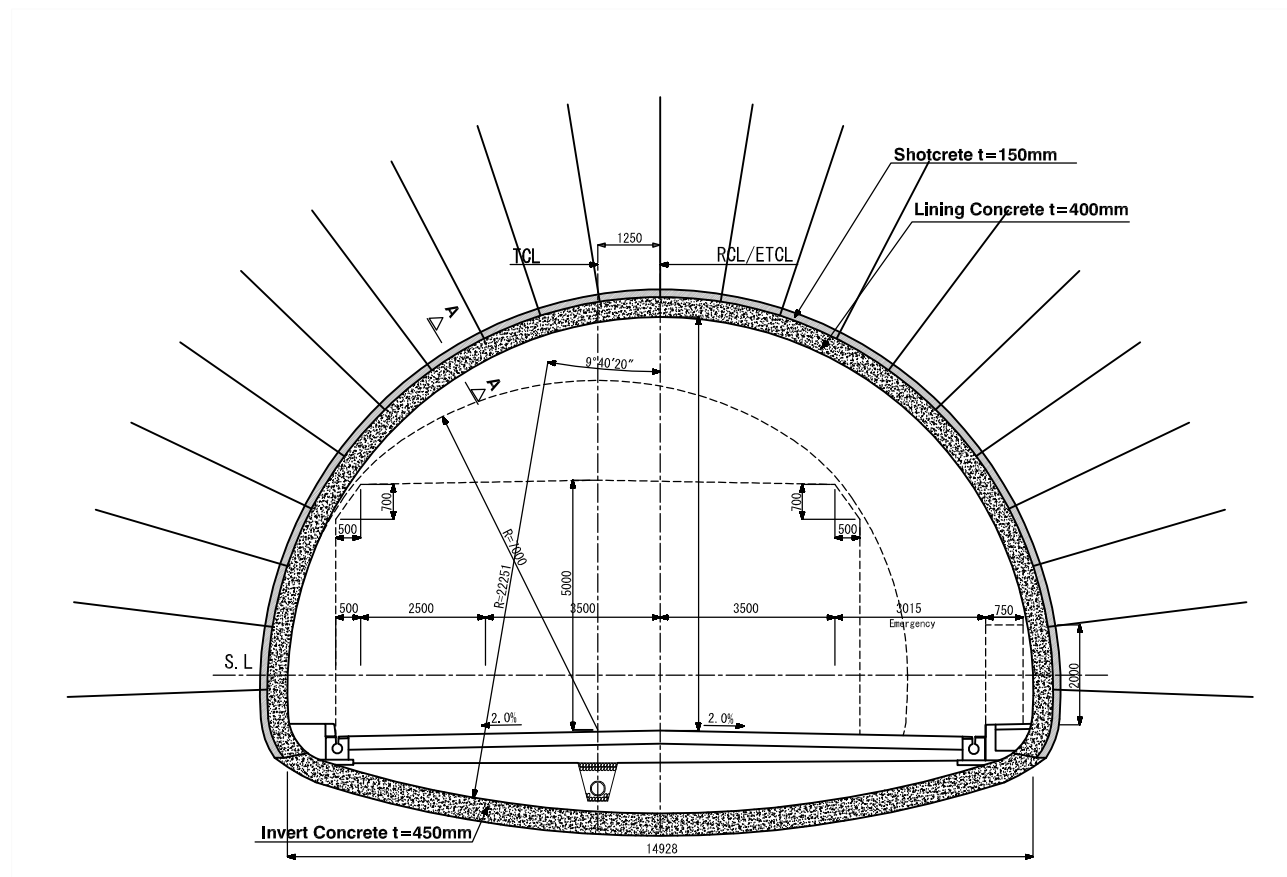


Section B-B (1:500)

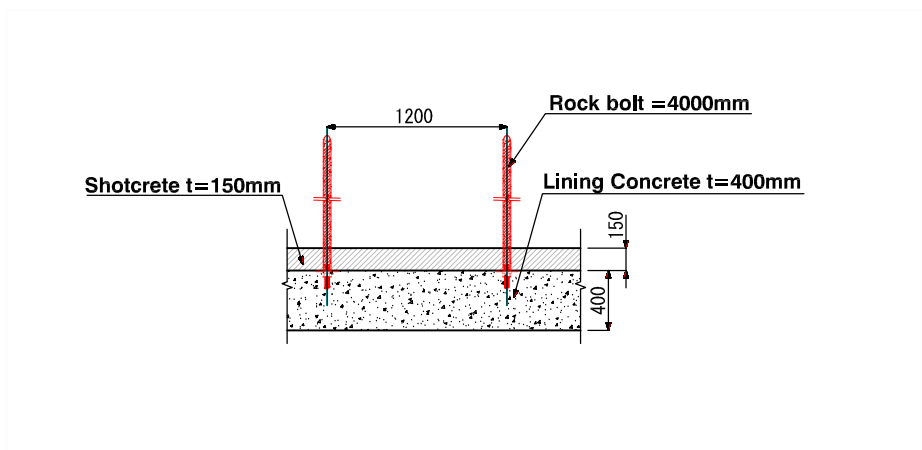








Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	Preparatory survey for Nagdhunga Tunnel Construction in Nepal	Tunnel Support Pattern (3)	As Shown

Tunnel Pattern C2-L (1:1500)

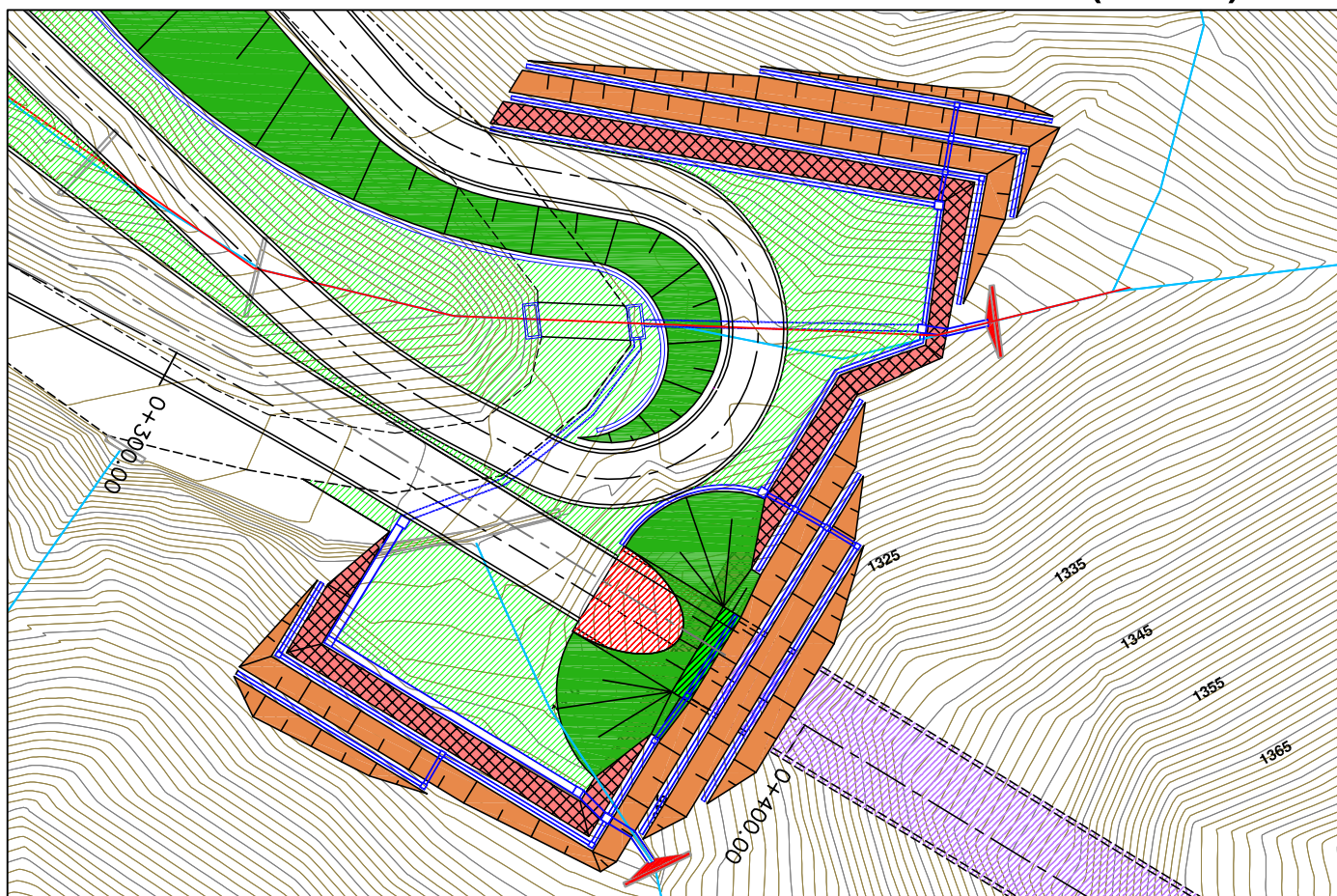


Section A-A (1:500)

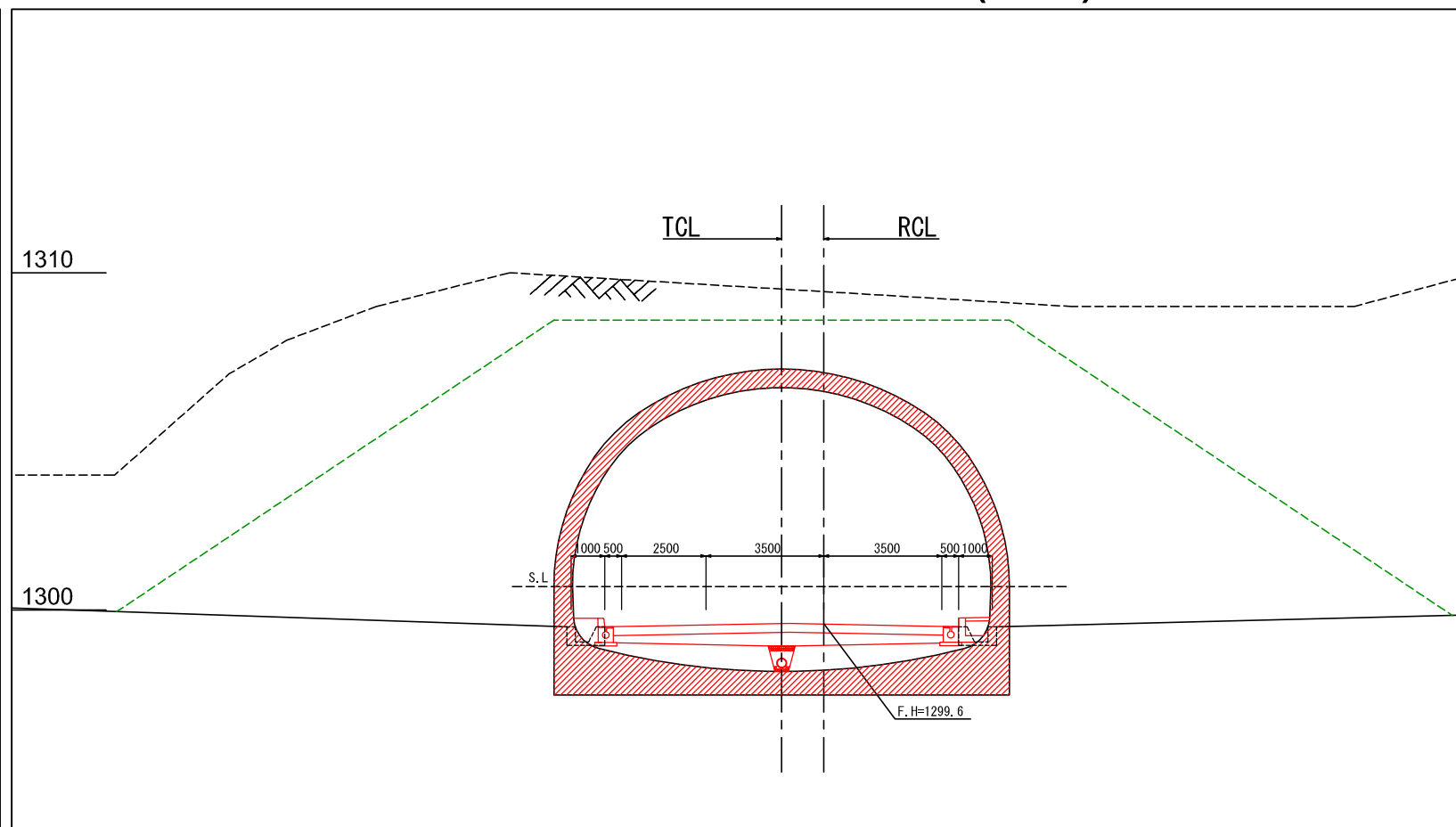


Clients:  Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	Consultants:  CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	Project Title: Preparatory survey for Nagdhunga Tunnel Construction in Nepal	Sheet Contents: Tunnel Support Pattern (4)	Scale: As Shown	SHT. NO. 16
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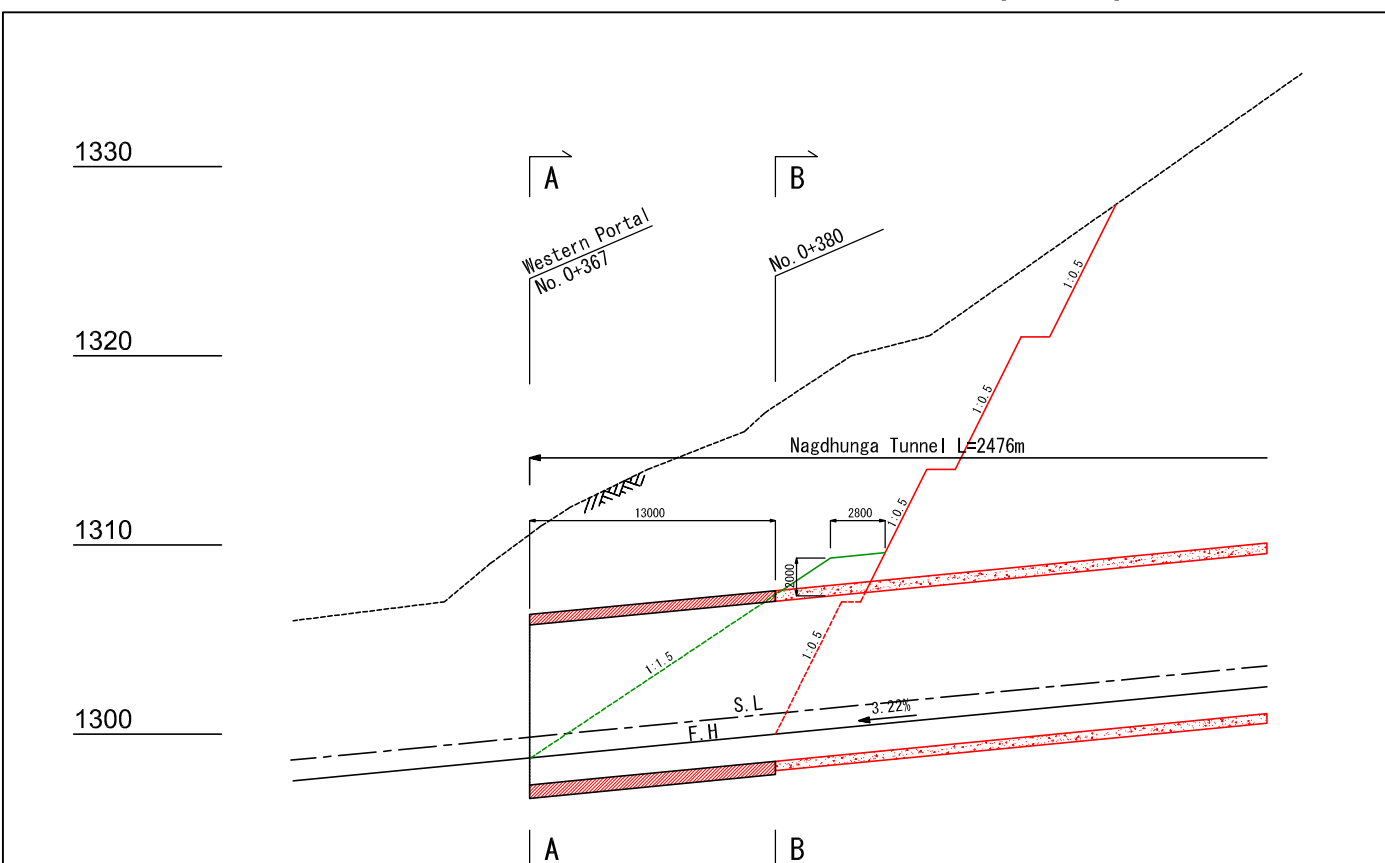
Plan of Western Tunnel Portal (1:1000)



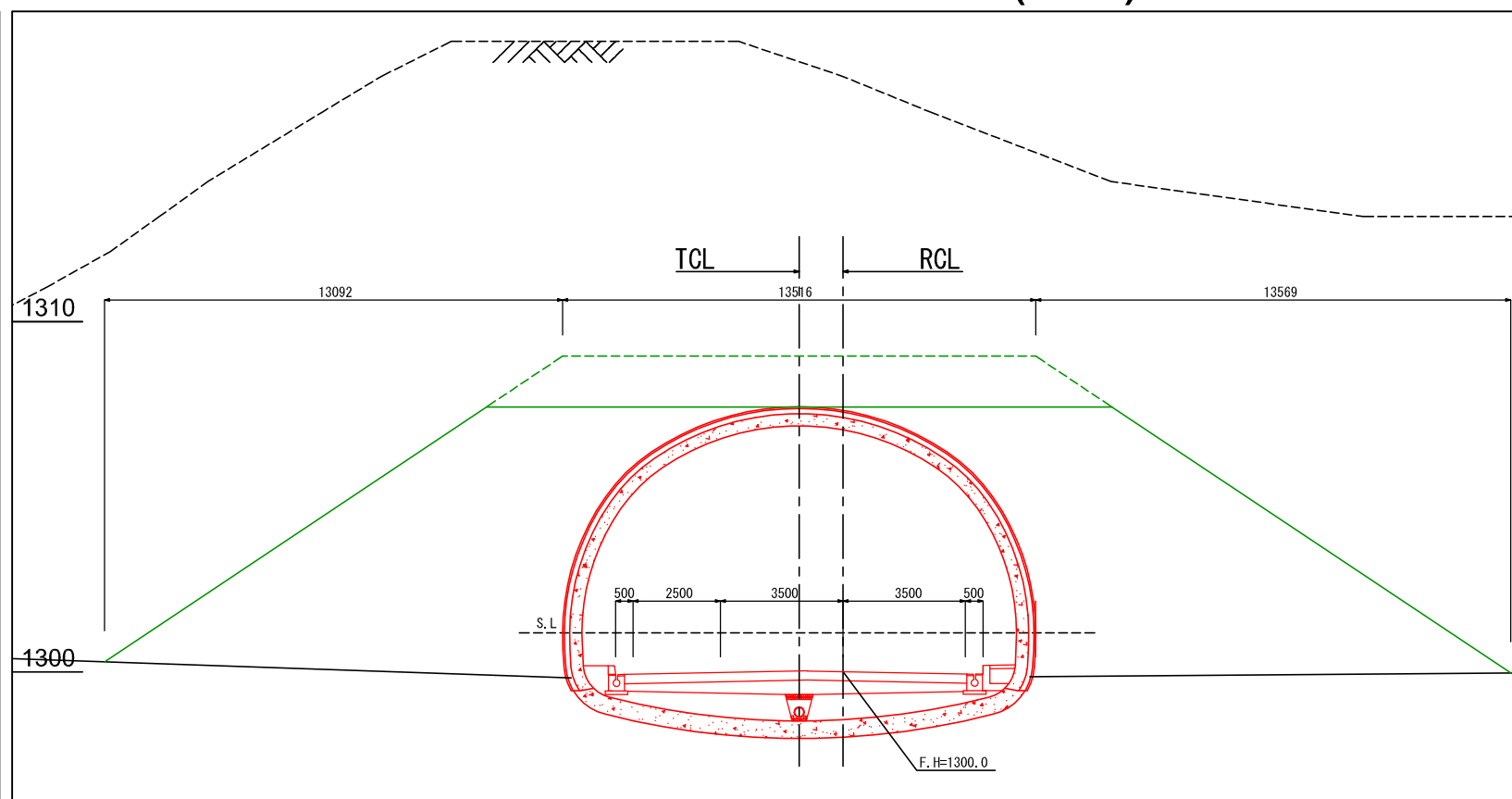
Cross Section of "A-A" (1:200)



Profile of Tunnel Portal (1:400)



Cross Section of "B-B" (1:200)



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:

General Drawing of Tunnel Portal (1)

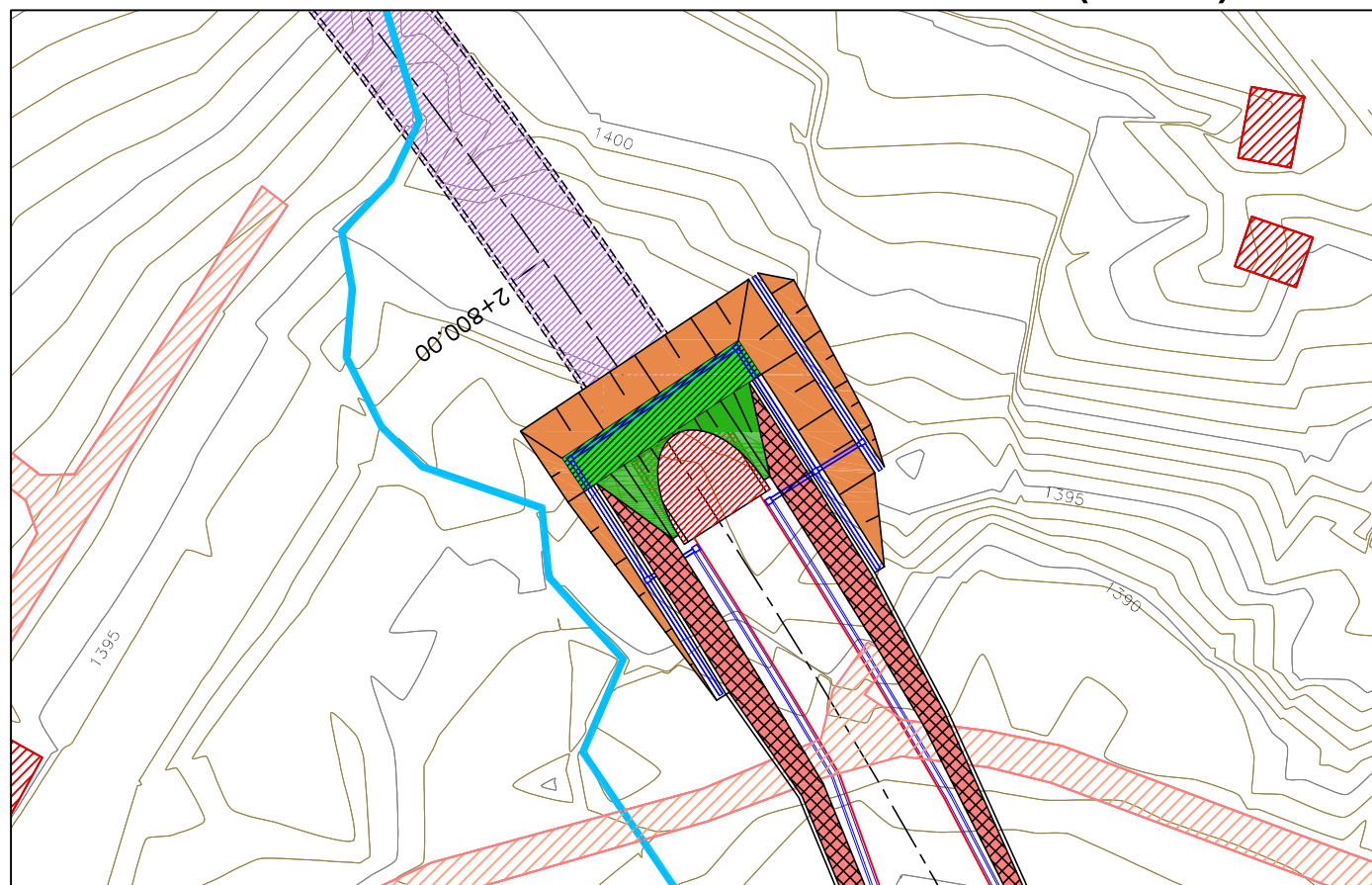
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As Shown

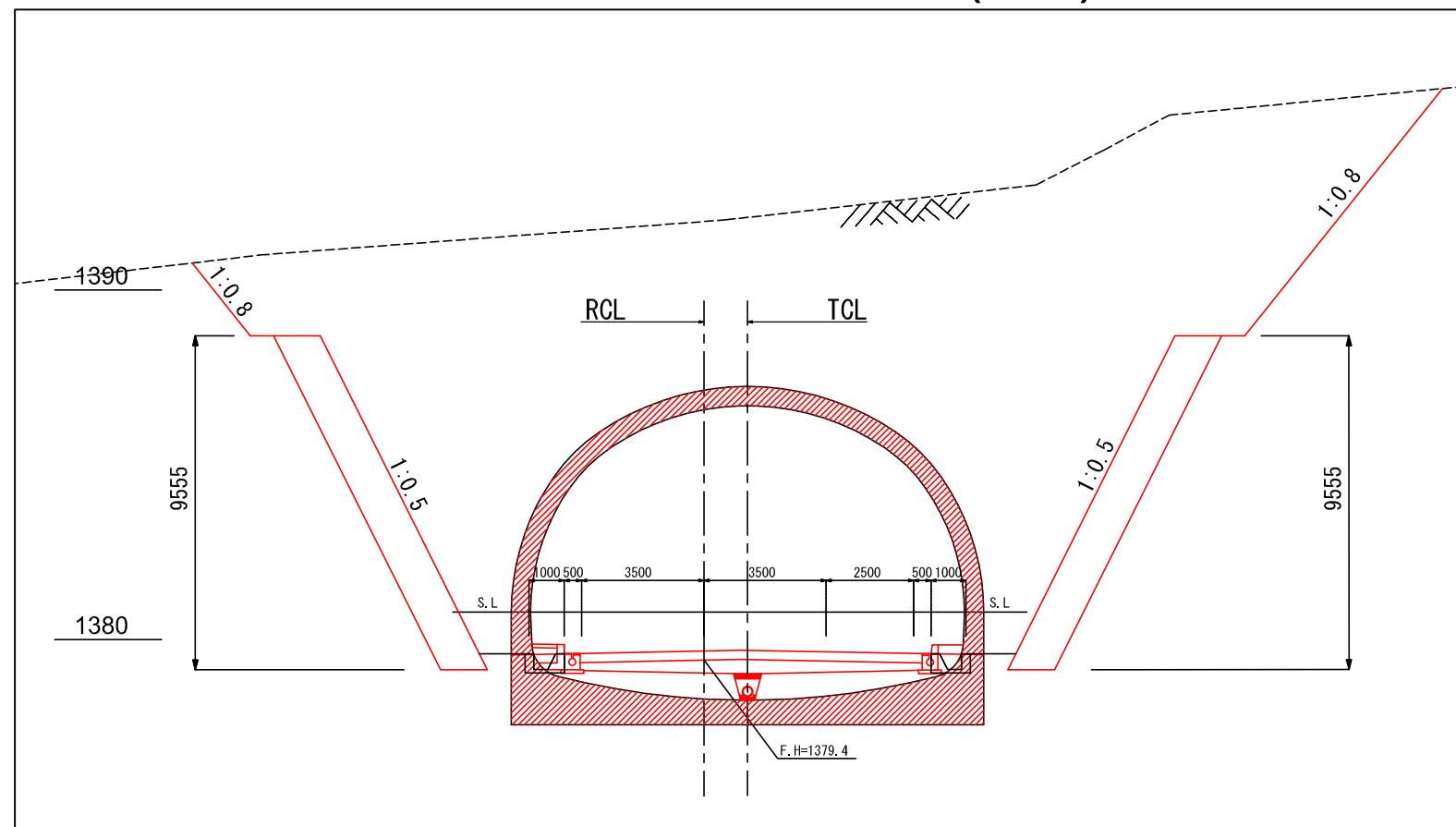
SHT. NO.

17

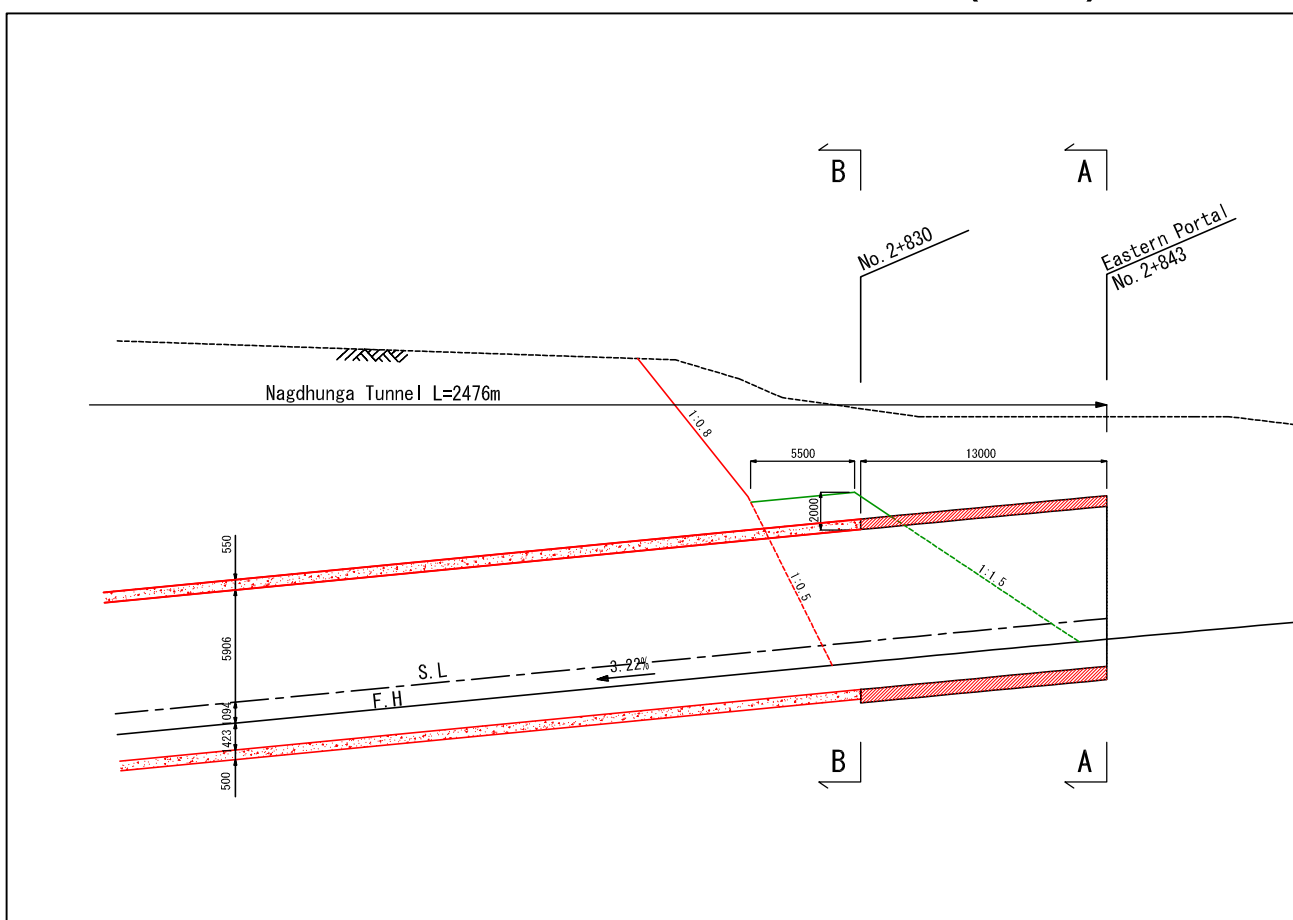
Plan of Eastern Tunnel Portal (1:1000)



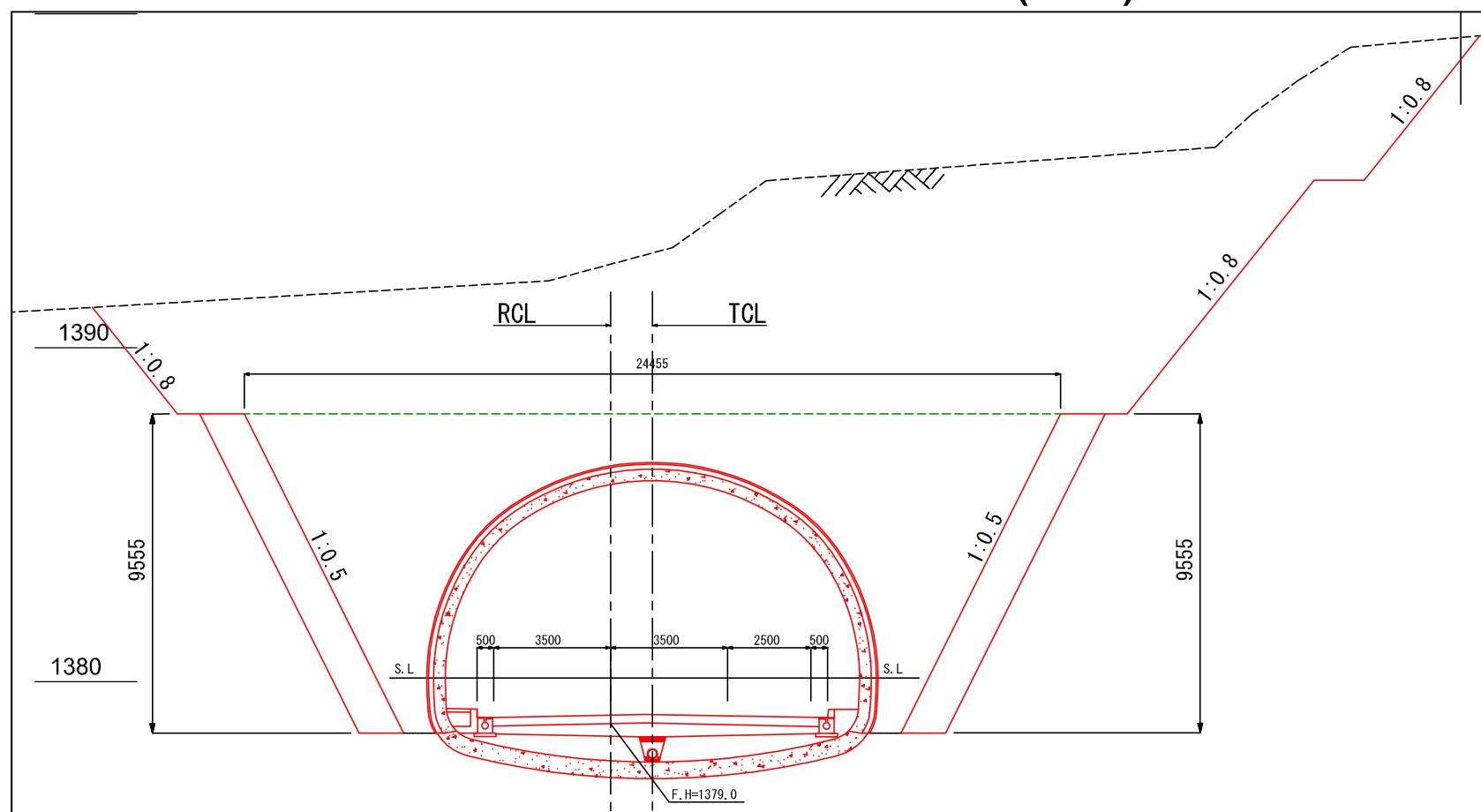
Cross Section of "A-A" (1:200)



Profile of Tunnel Portal (1:400)



Cross Section of "B-B" (1:200)



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:

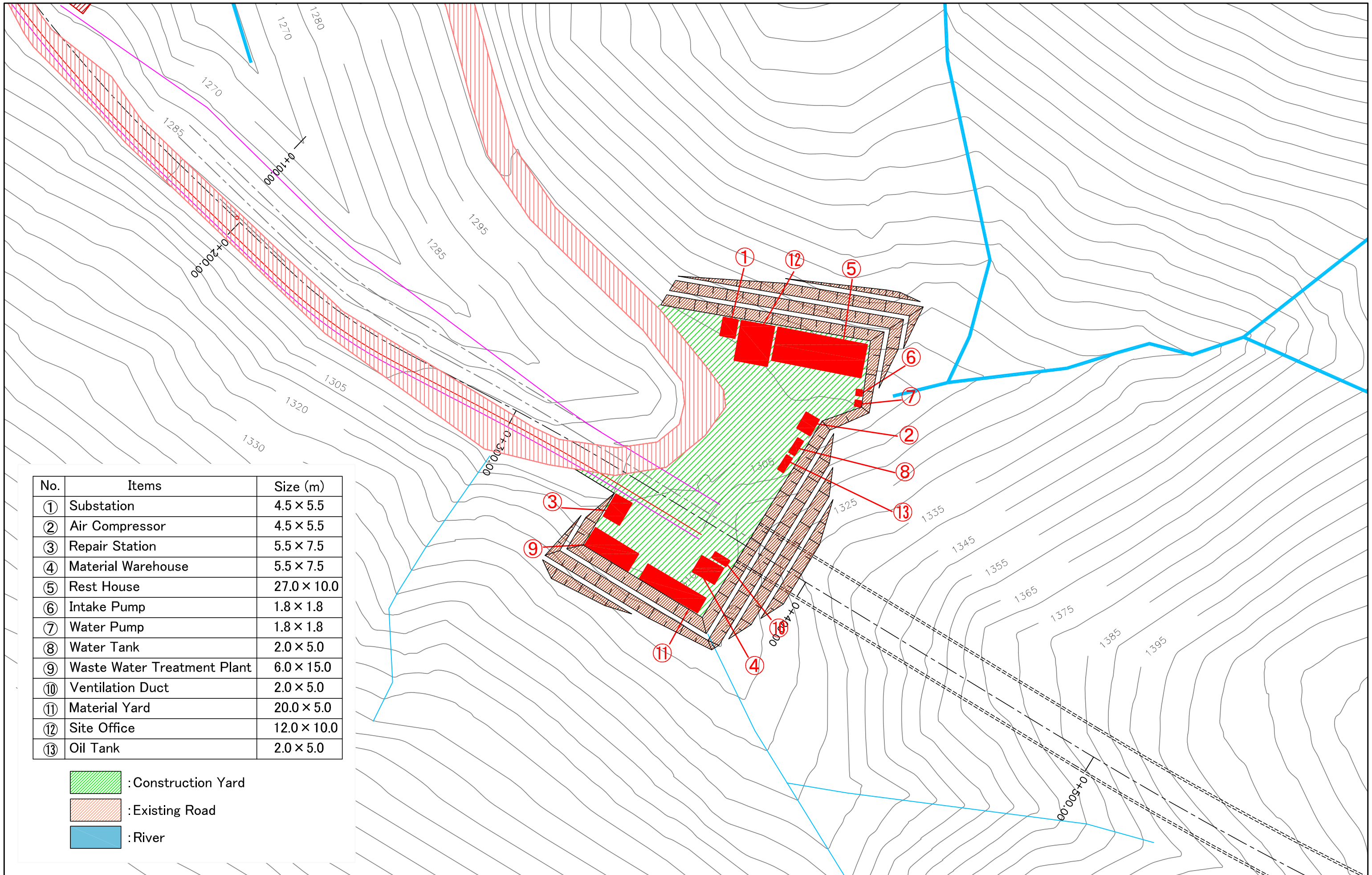
General Drawing of Tunnel Portal (2)

Scale:

As Shown

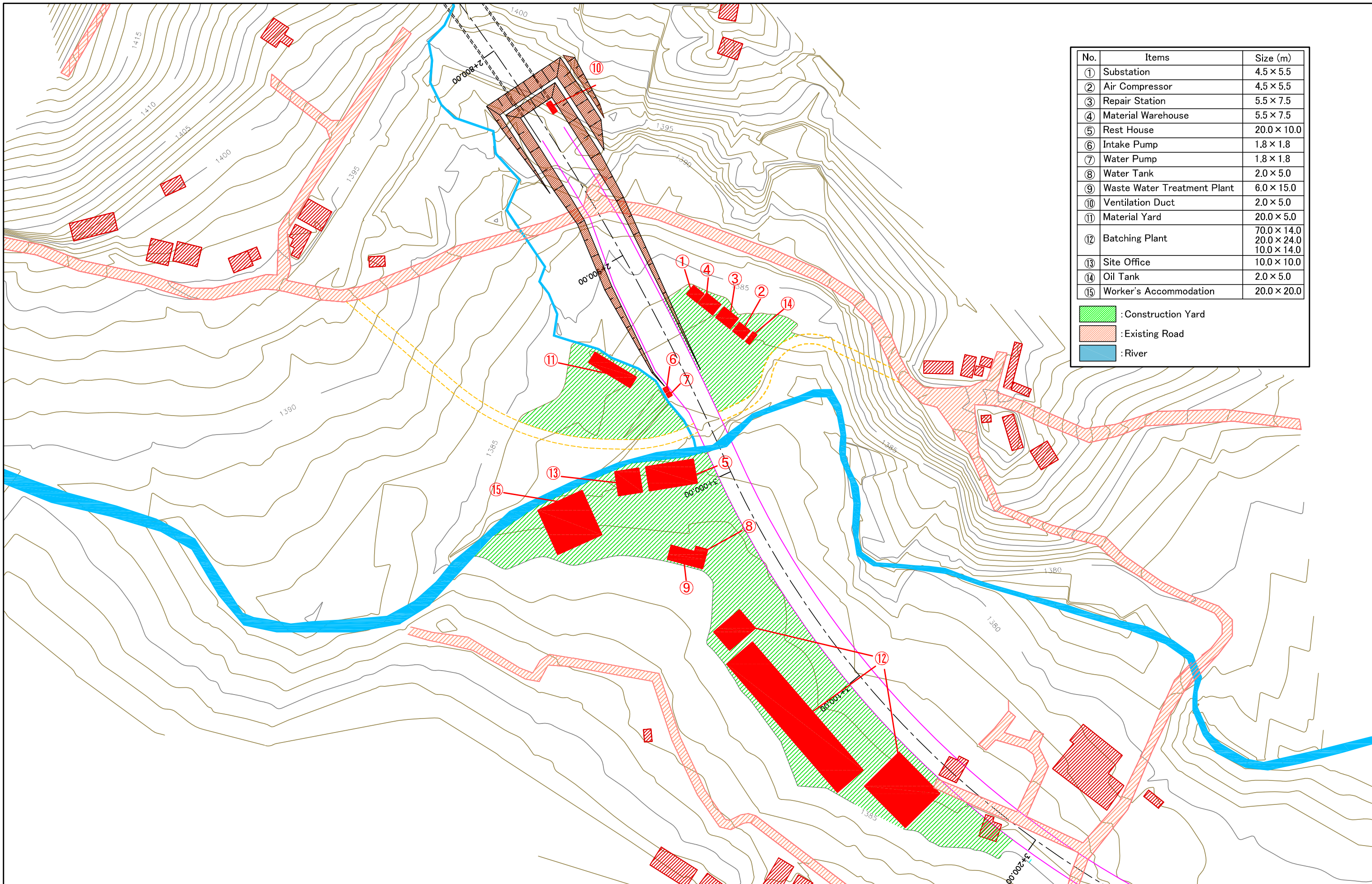
SHT. NO.

18



No.	Items	Size (m)
①	Substation	4.5 × 5.5
②	Air Compressor	4.5 × 5.5
③	Repair Station	5.5 × 7.5
④	Material Warehouse	5.5 × 7.5
⑤	Rest House	27.0 × 10.0
⑥	Intake Pump	1.8 × 1.8
⑦	Water Pump	1.8 × 1.8
⑧	Water Tank	2.0 × 5.0
⑨	Waste Water Treatment Plant	6.0 × 15.0
⑩	Ventilation Duct	2.0 × 5.0
⑪	Material Yard	20.0 × 5.0
⑫	Site Office	12.0 × 10.0
⑬	Oil Tank	2.0 × 5.0

- : Construction Yard
- : Existing Road
- : River



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:

Layout of Tunnel Temporary Facilities (2)

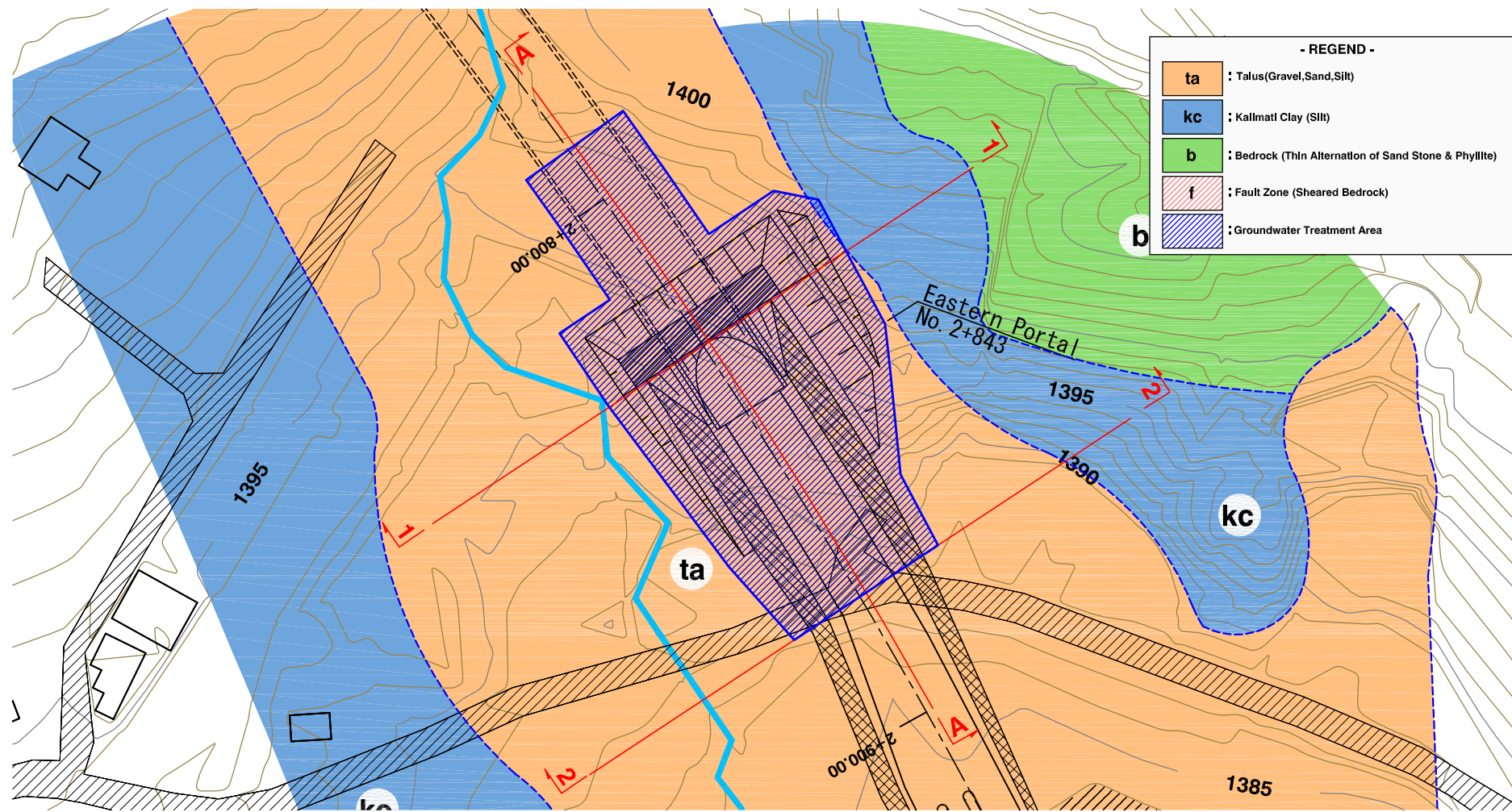
Scale:

1:700

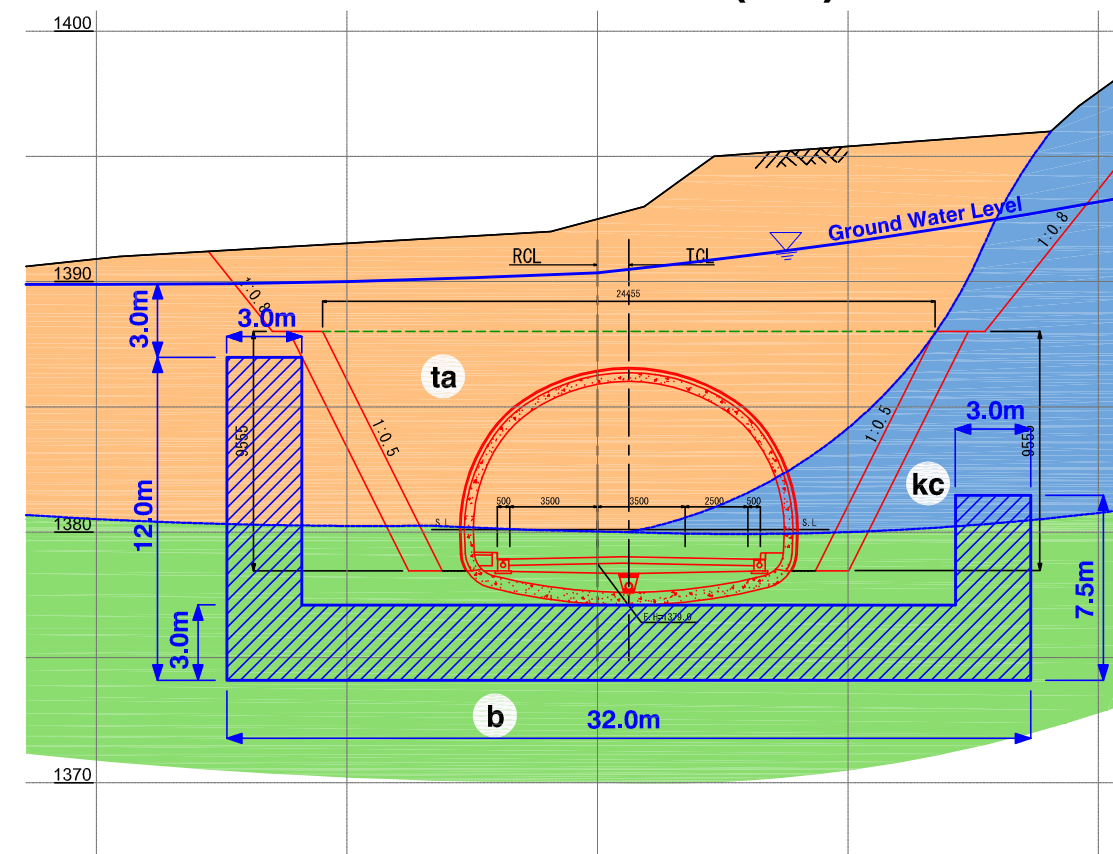
SHT. NO.

20

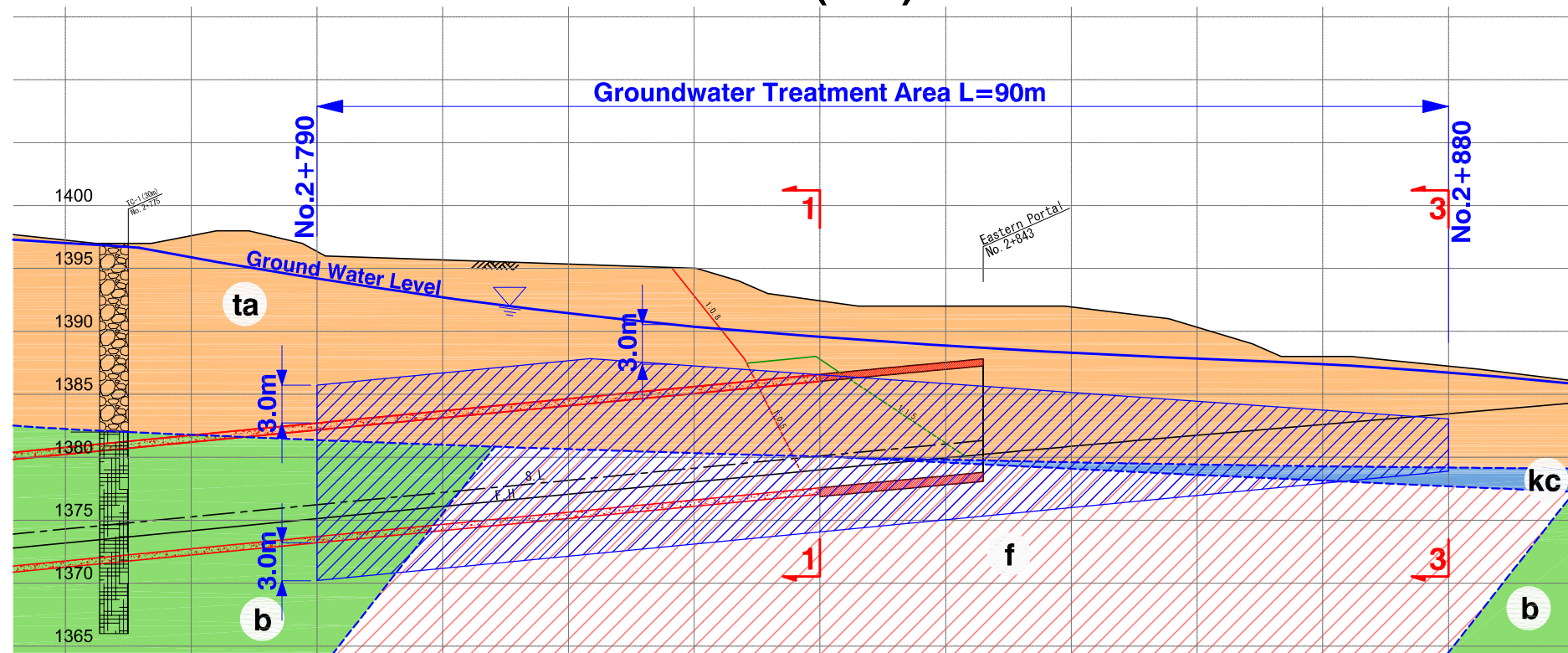
Plan 1:2000



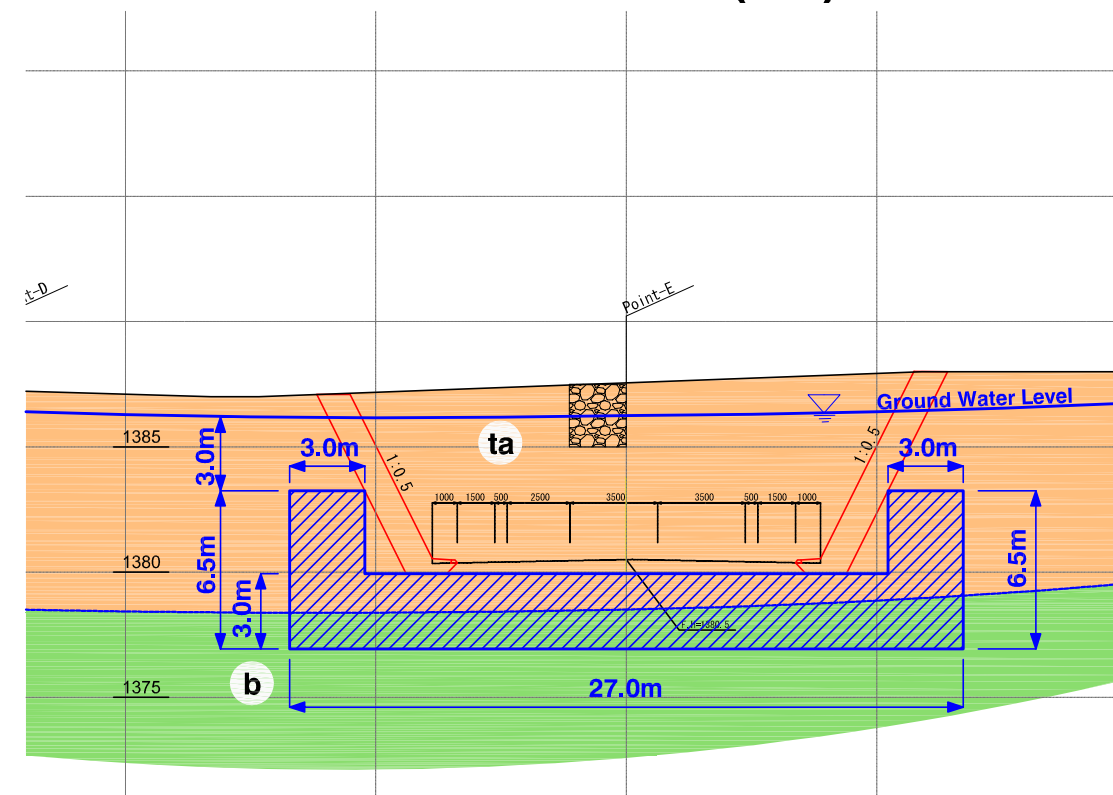
Cross Section (1-1) 1:300









Profile (A-A) 1:500

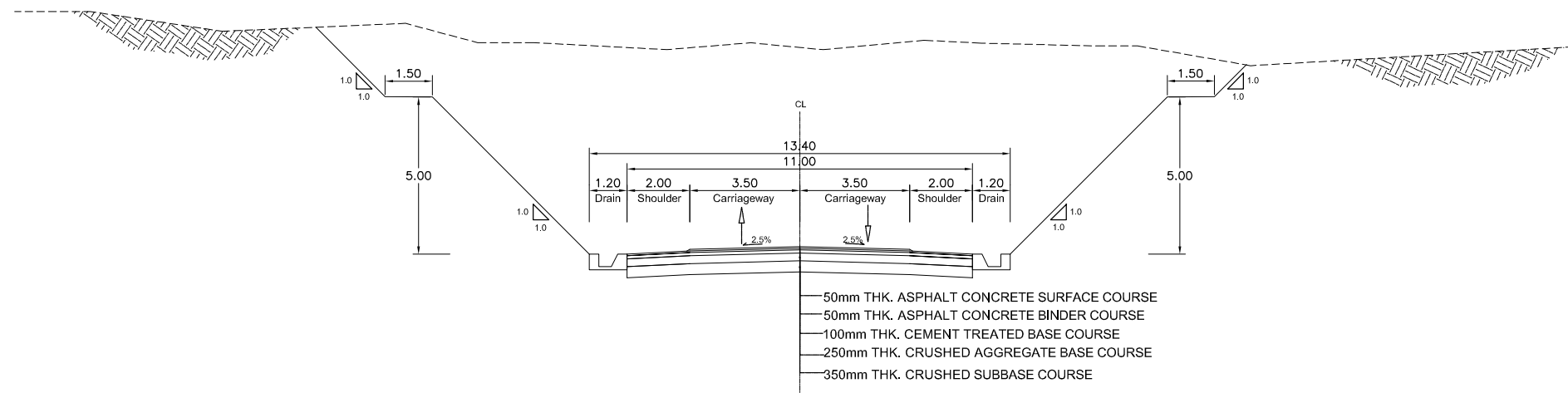


Cross Section (2-2) 1:300

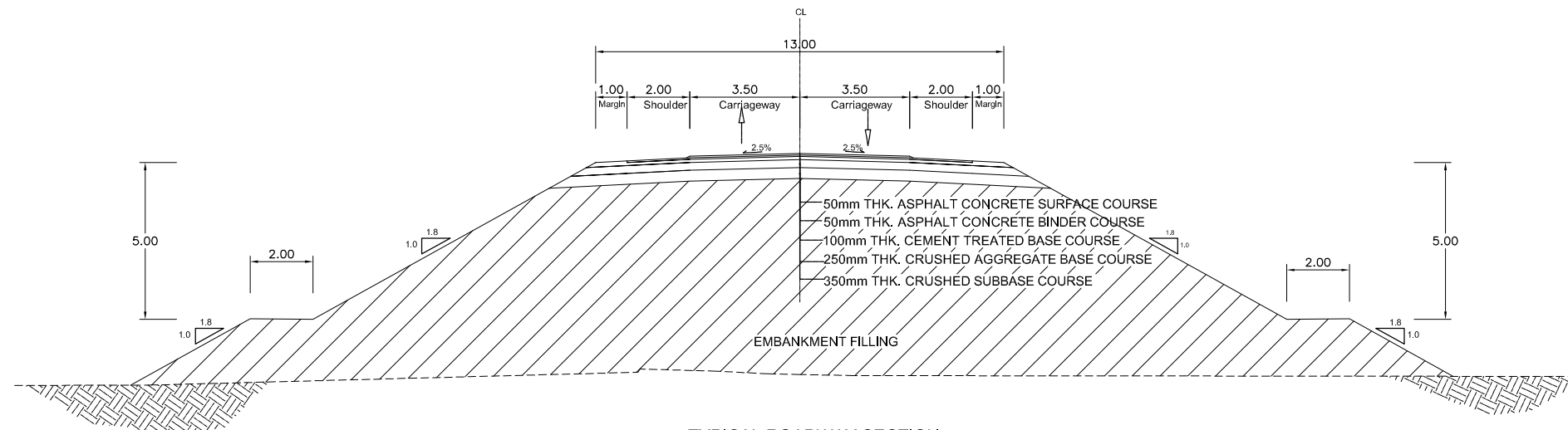


<p>Clients:</p>  Japan International Cooperation Agency  Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	<p>Consultants:</p>  CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	<p>Project Title:</p> Preparatory survey for Nagdhunga Tunnel Construction in Nepal	<p>Sheet Contents:</p> General Drawing of Groundwater Treatment	<p>Scale:</p> As Shown	<p>SHT. NO.</p> 21
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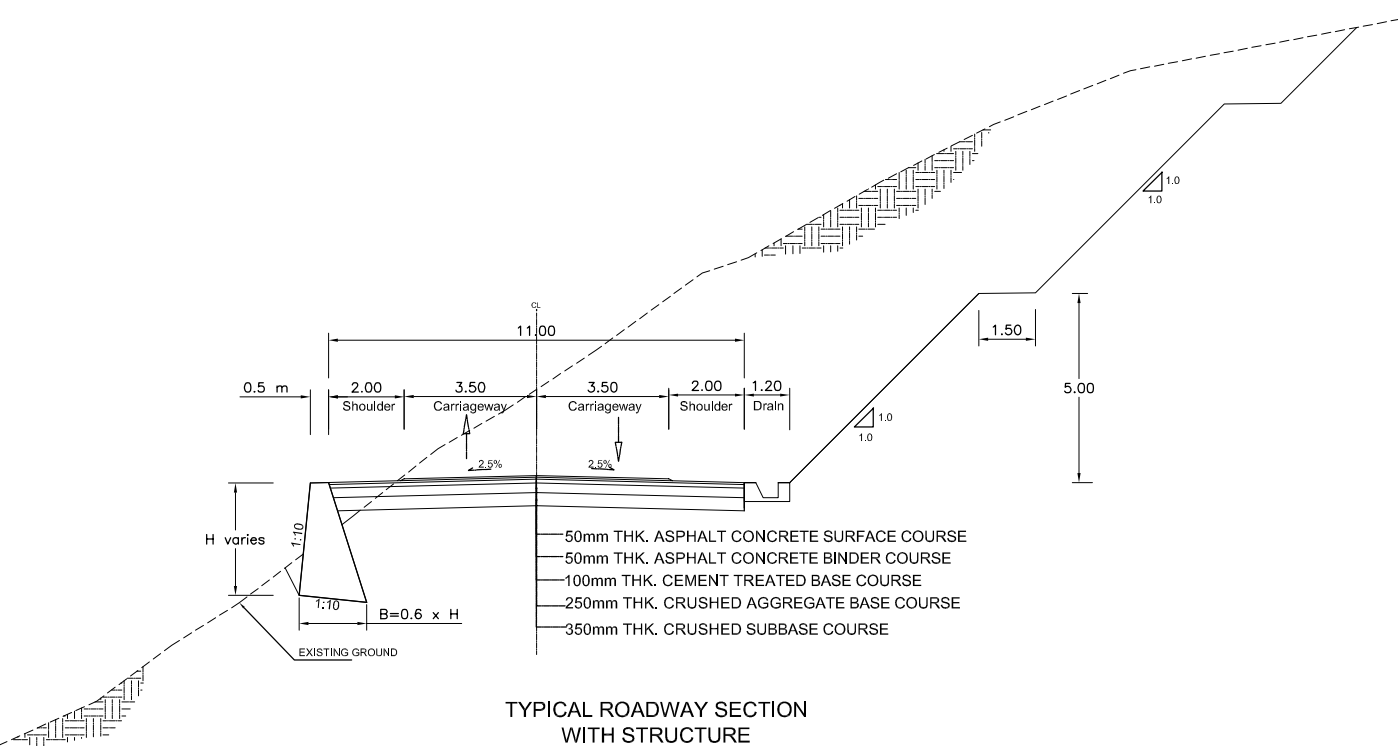
CROSS SECTIONS








TYPICAL ROADWAY SECTION
BOX CUTTING



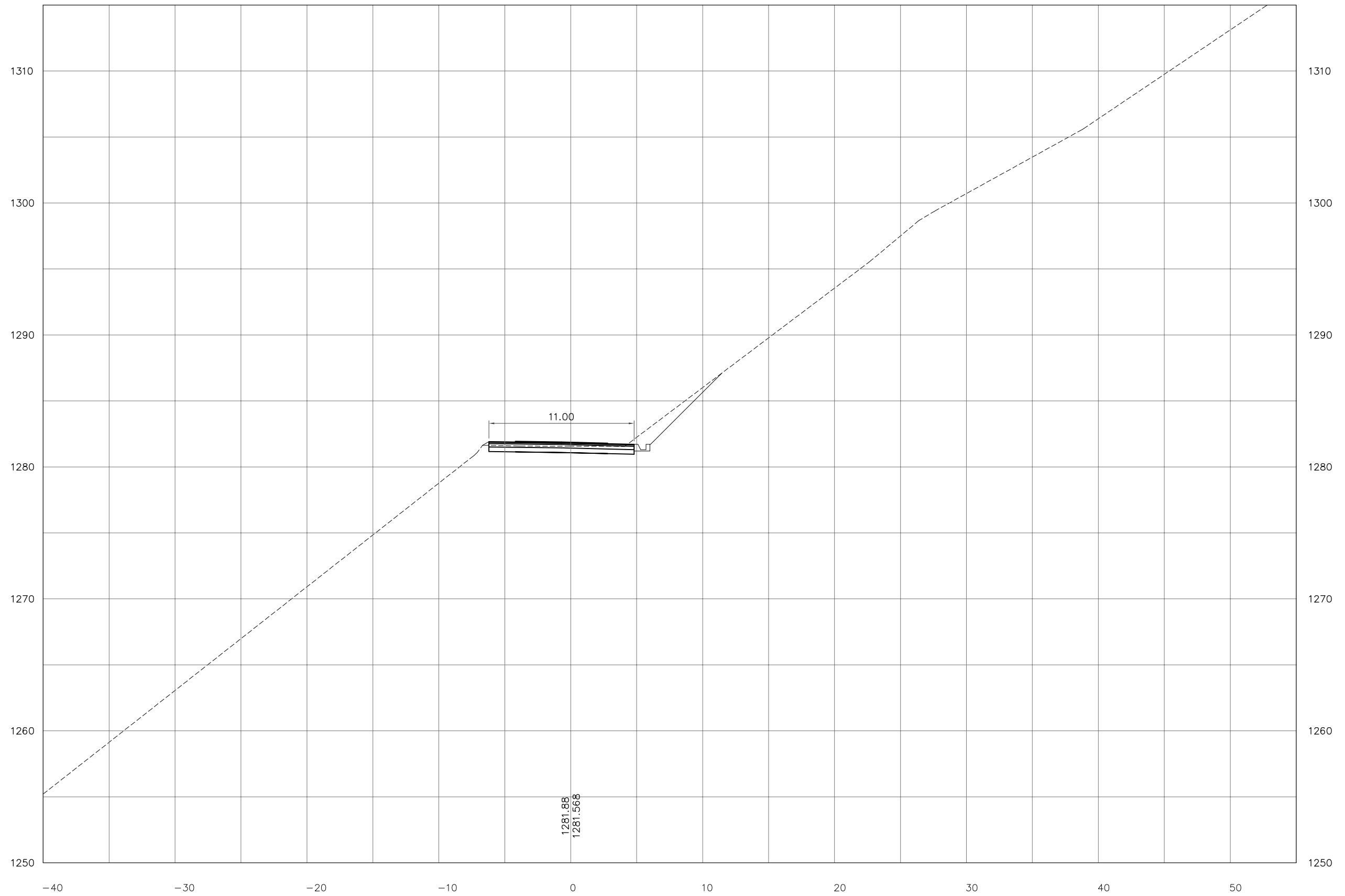
TYPICAL ROADWAY SECTION
EMBANKMENT FILLING



TYPICAL ROADWAY SECTION
WITH STRUCTURE

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	TYPICAL ROAD CROSS SECTIONS 1:200	23

0+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:

CROSS SECTIONS

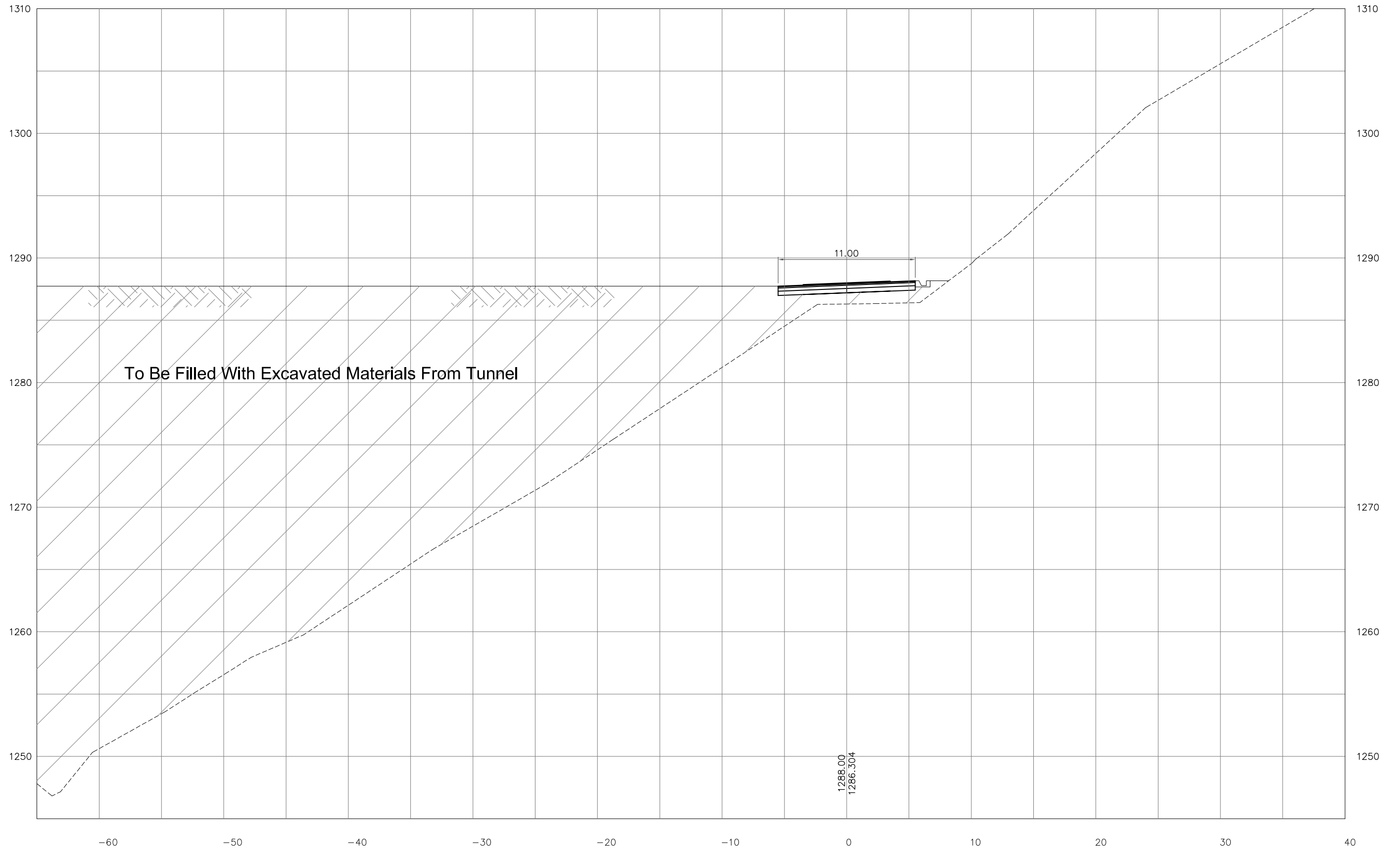
Scale:

1:300

SHT. NO.

24

0+100.00



Clients:



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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:

CROSS SECTIONS

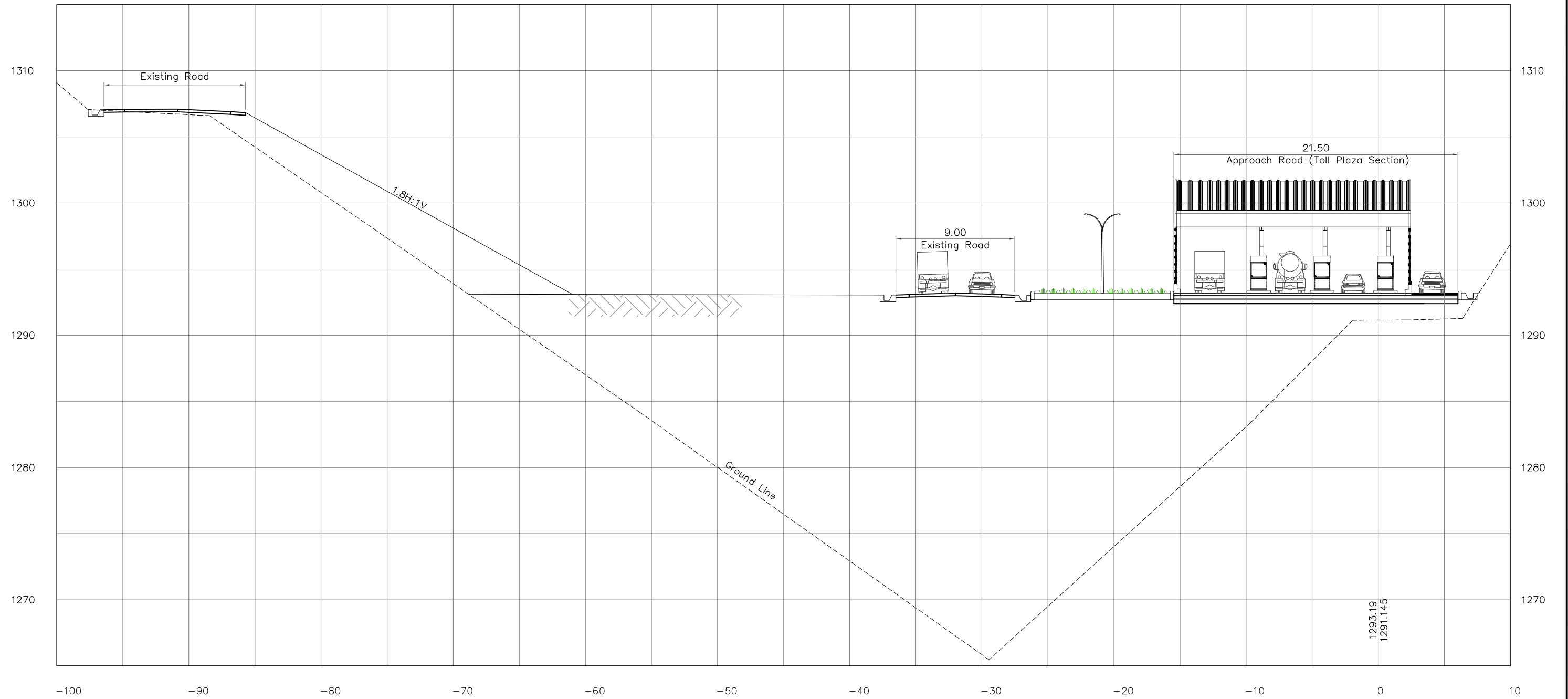
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SHT. NO.

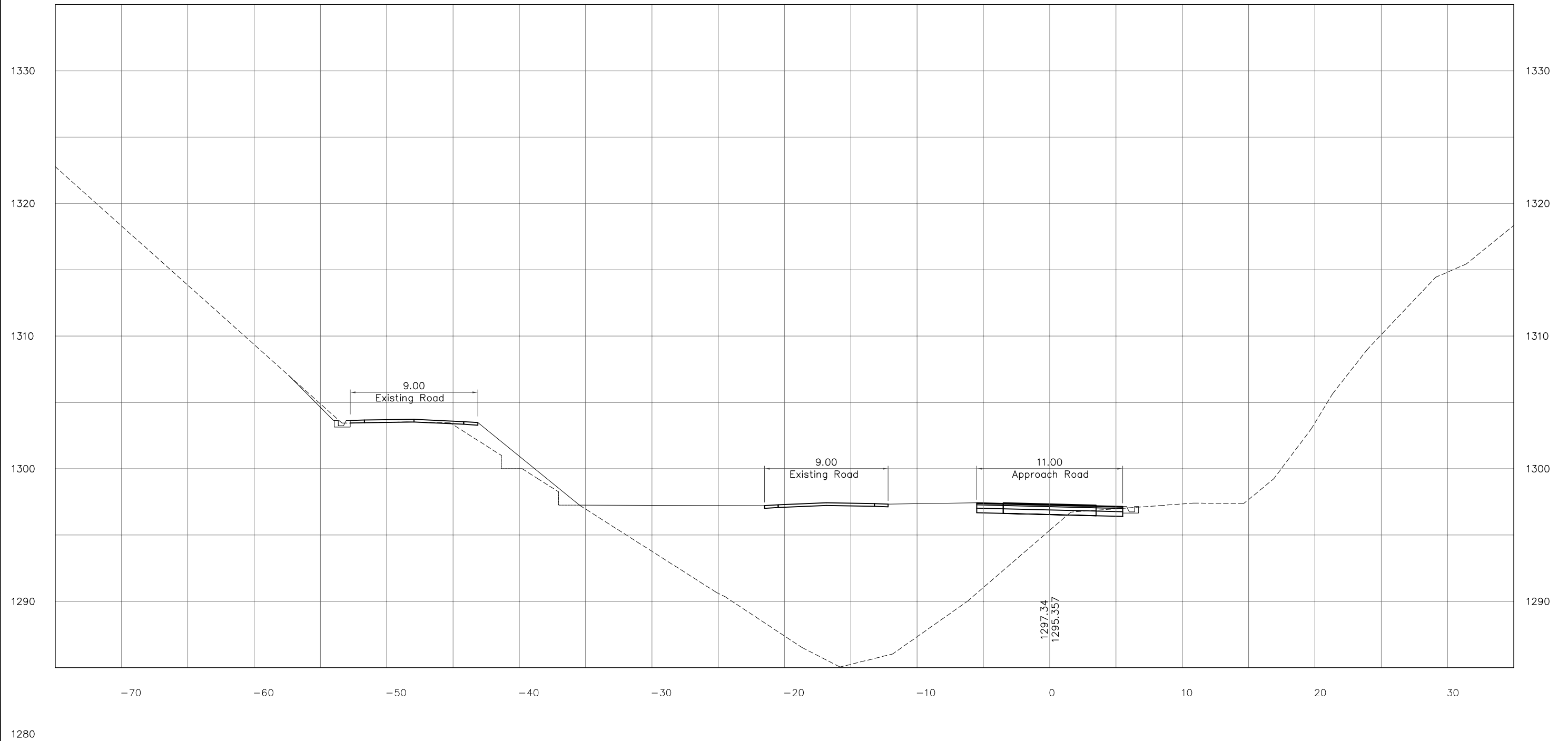
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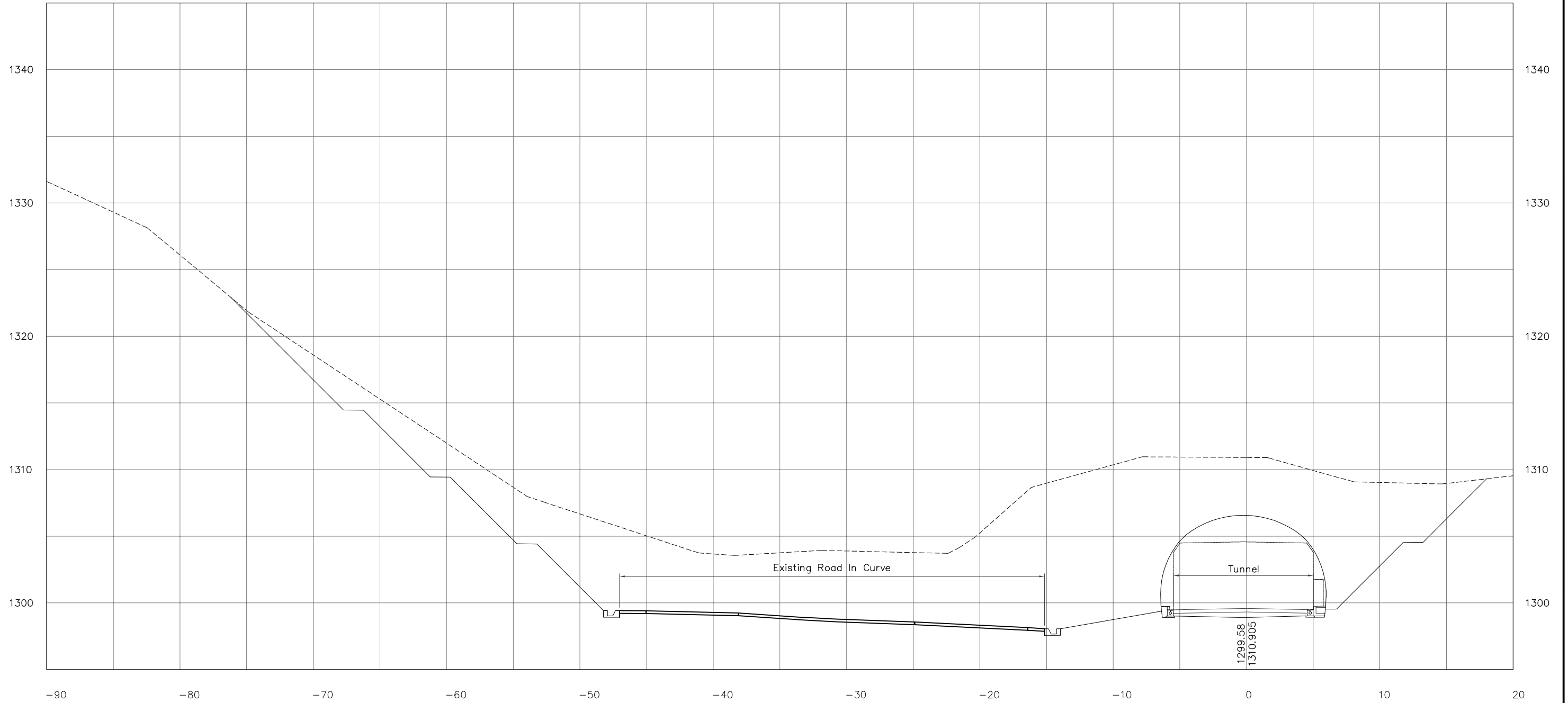
Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	<p>Preparatory survey for Nagdhunga Tunnel Construction in Nepal</p> <p style="text-align: center;">CROSS SECTIONS</p>	<p>1:300</p>	<p style="text-align: center;">26</p>







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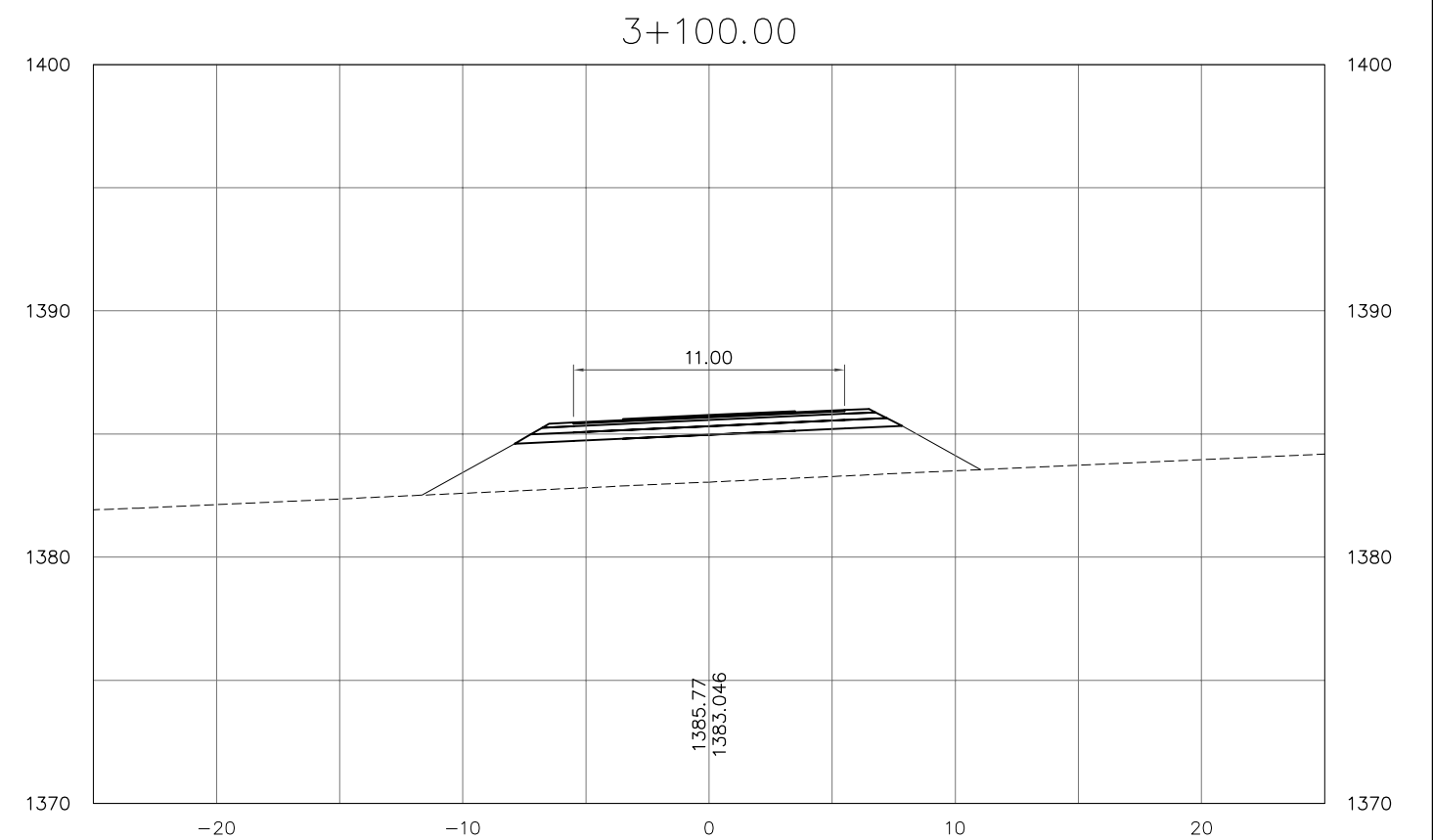
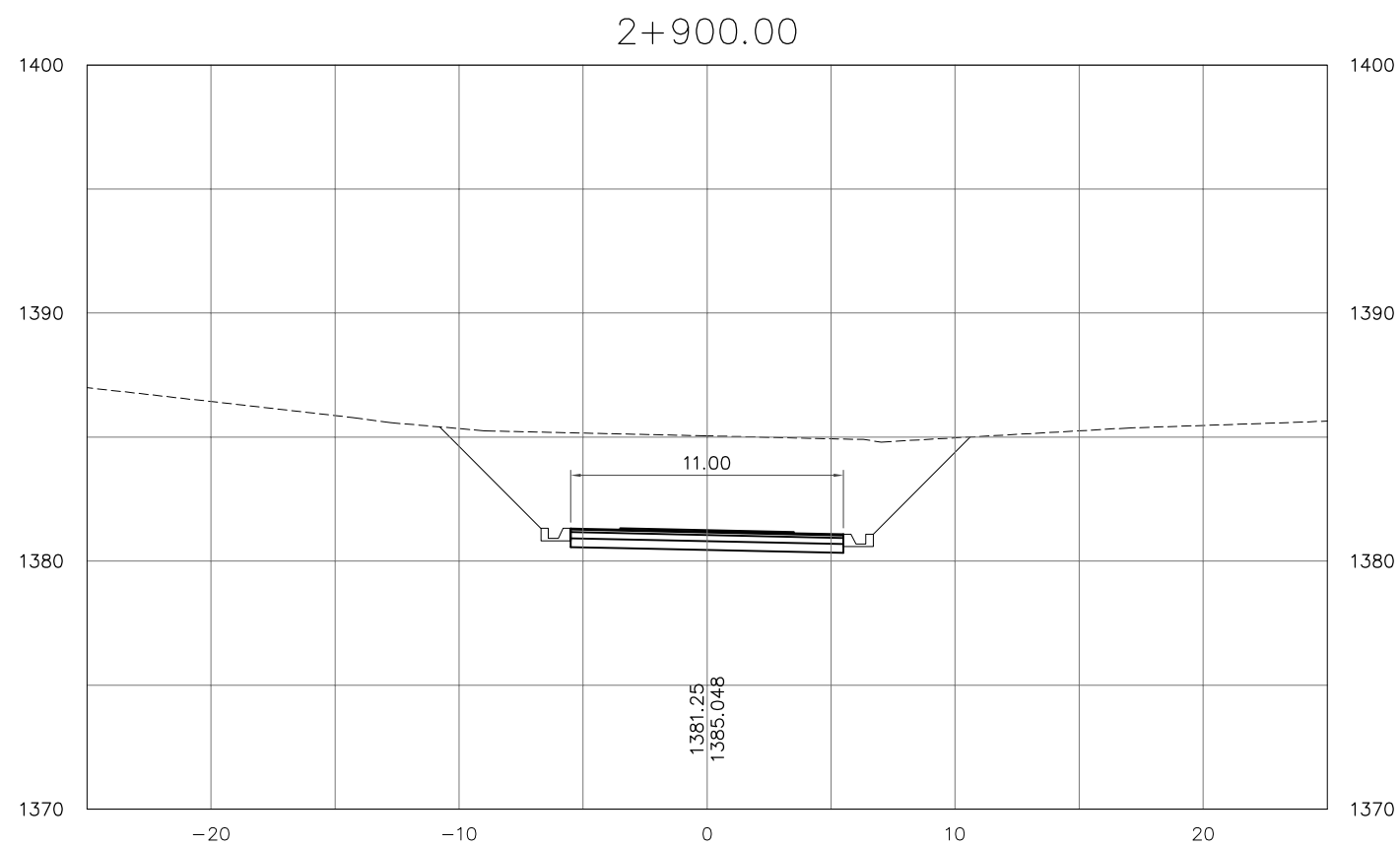
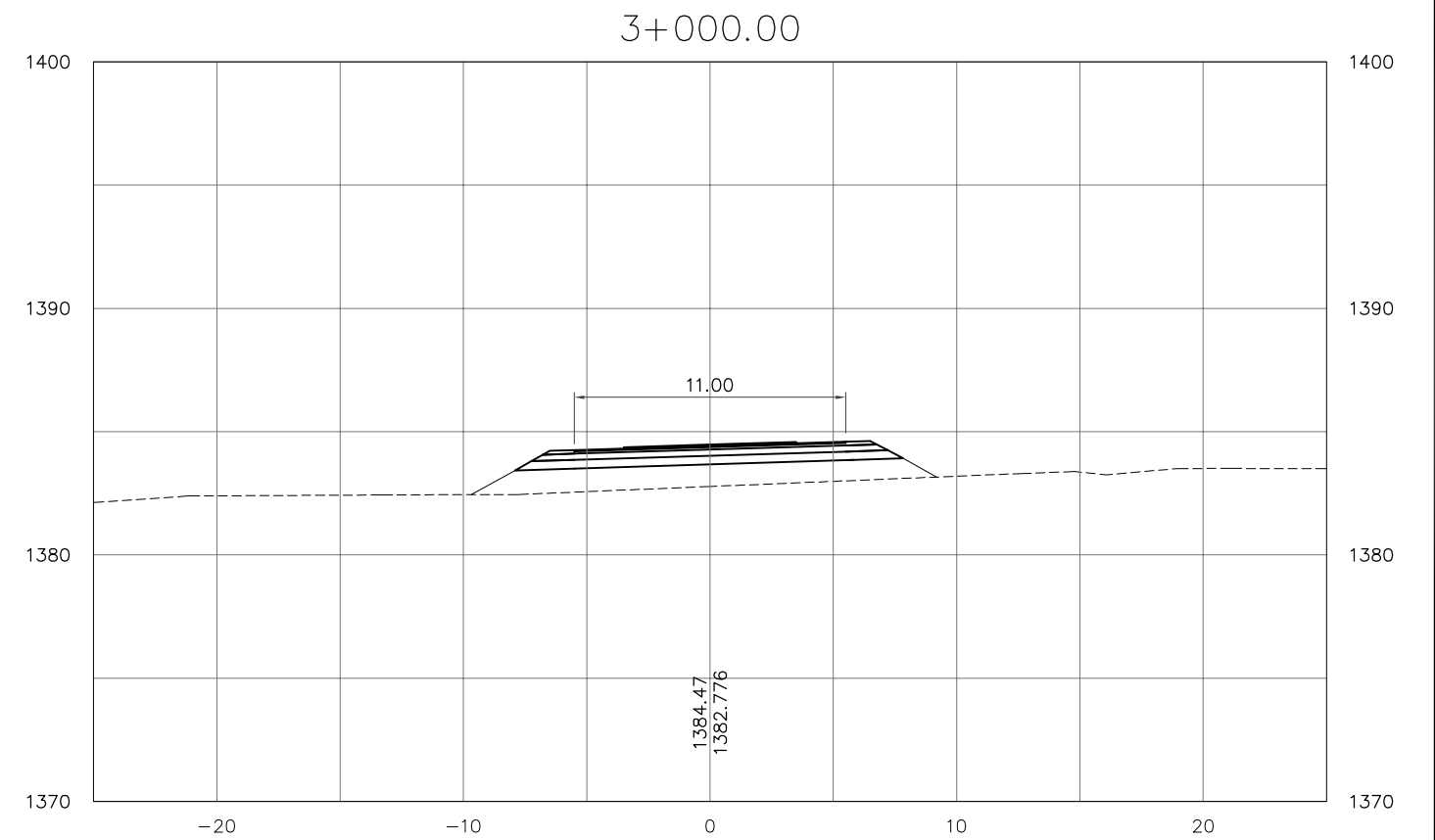
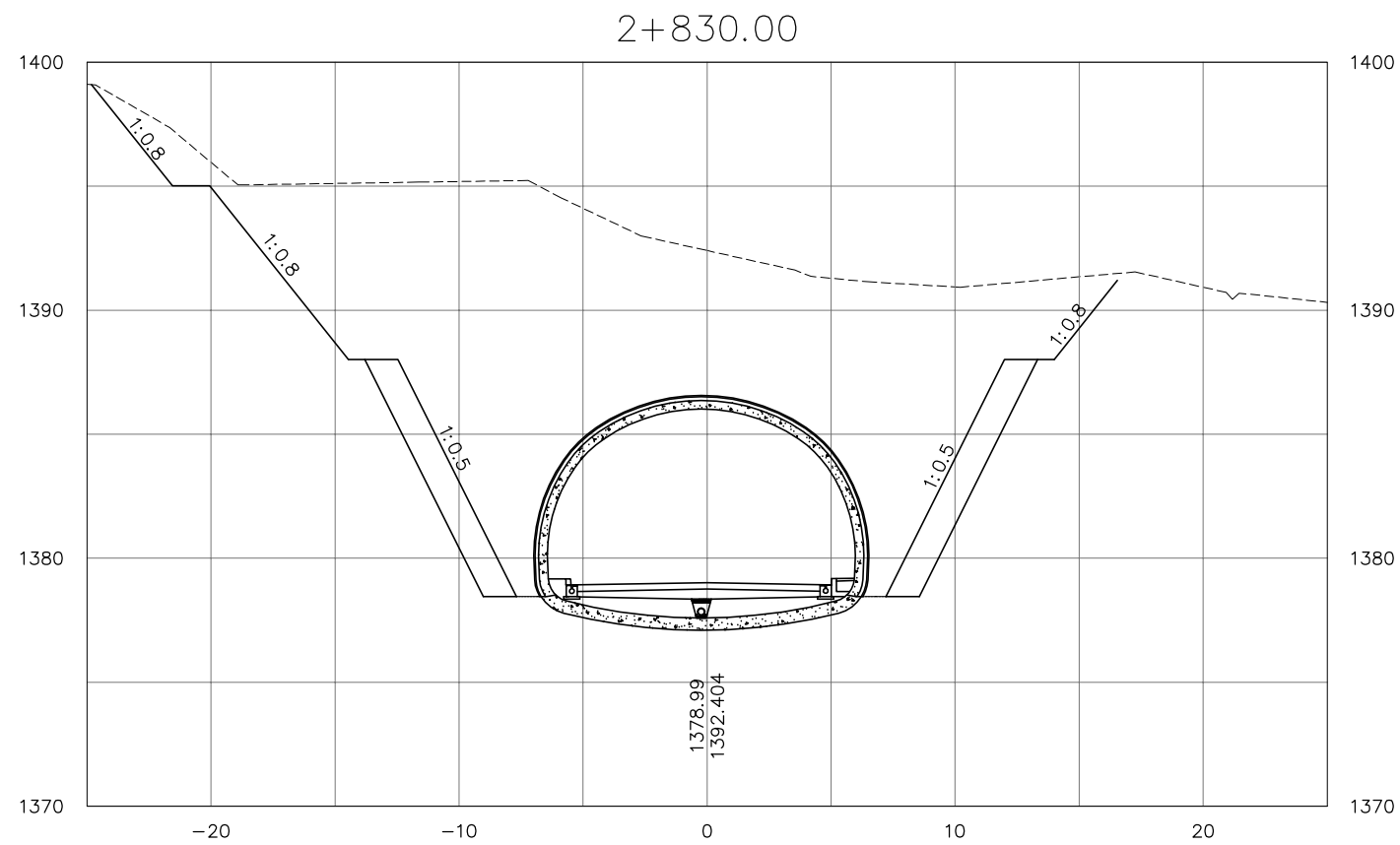








Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	<p style="text-align: center;">CROSS SECTIONS</p>	<p style="text-align: center;">1:300</p>	<p style="text-align: center;">27</p>

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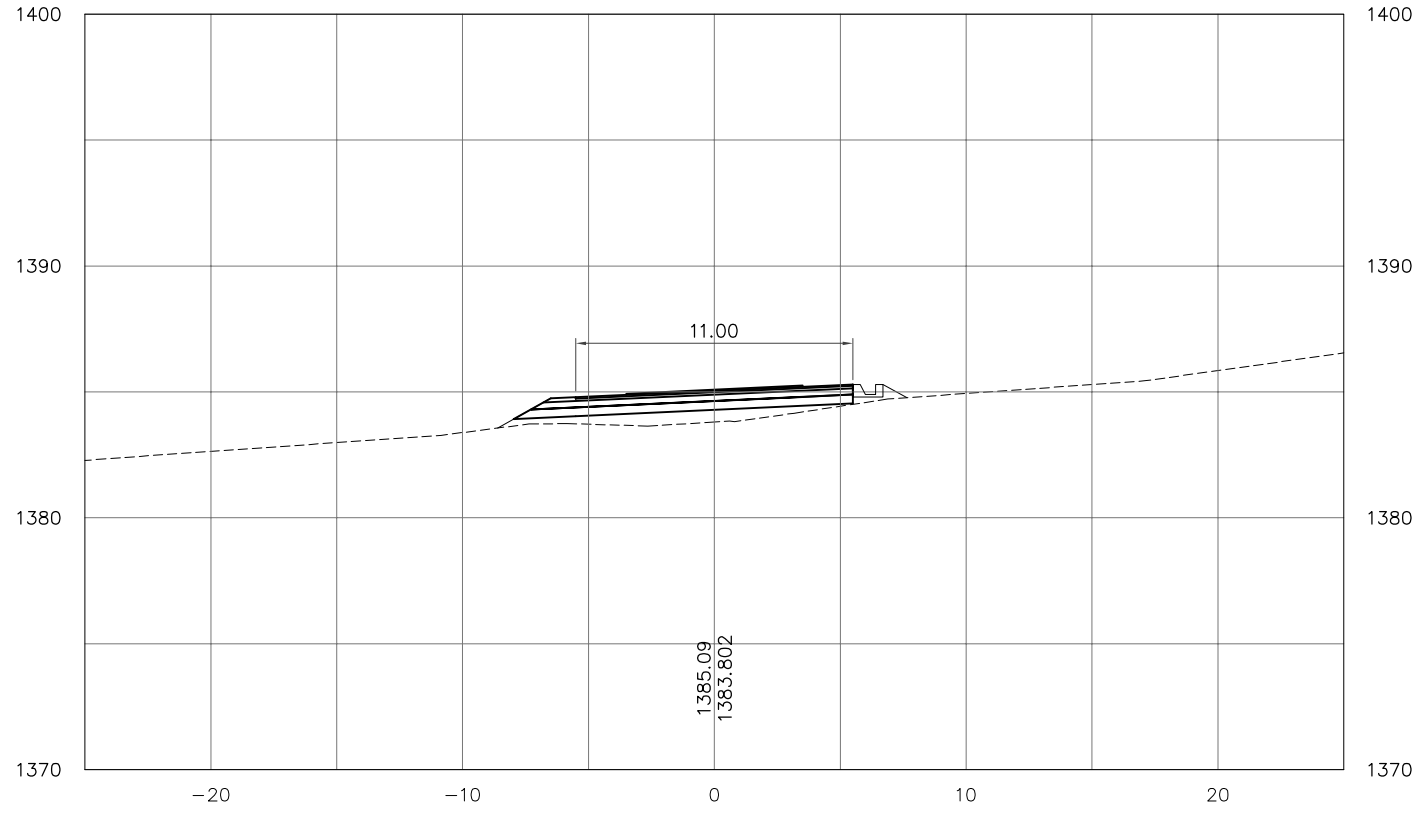


Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	CROSS SECTIONS	1:300	28

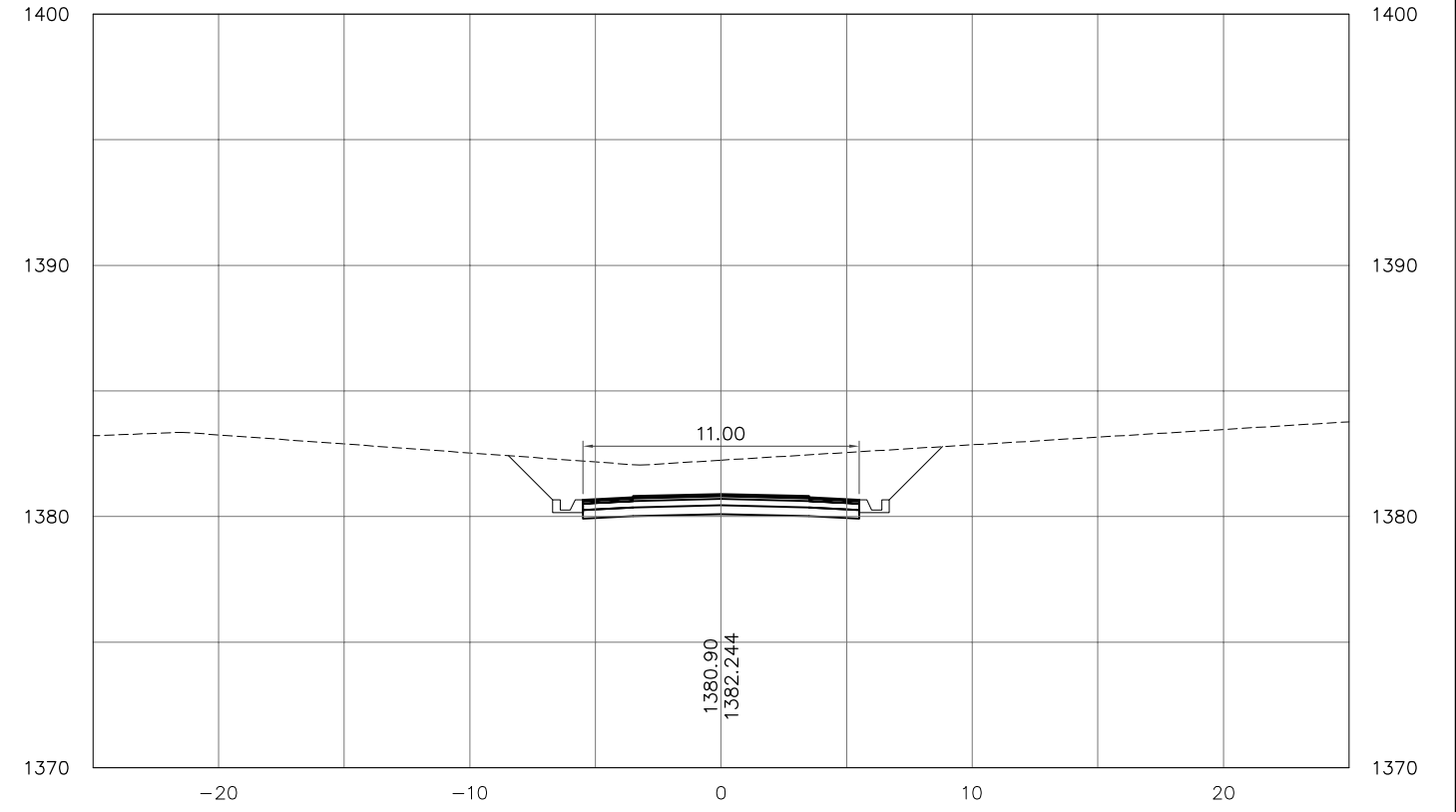


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 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	Preparatory survey for Nagdhunga Tunnel Construction in Nepal	CROSS SECTIONS	1:300
					29

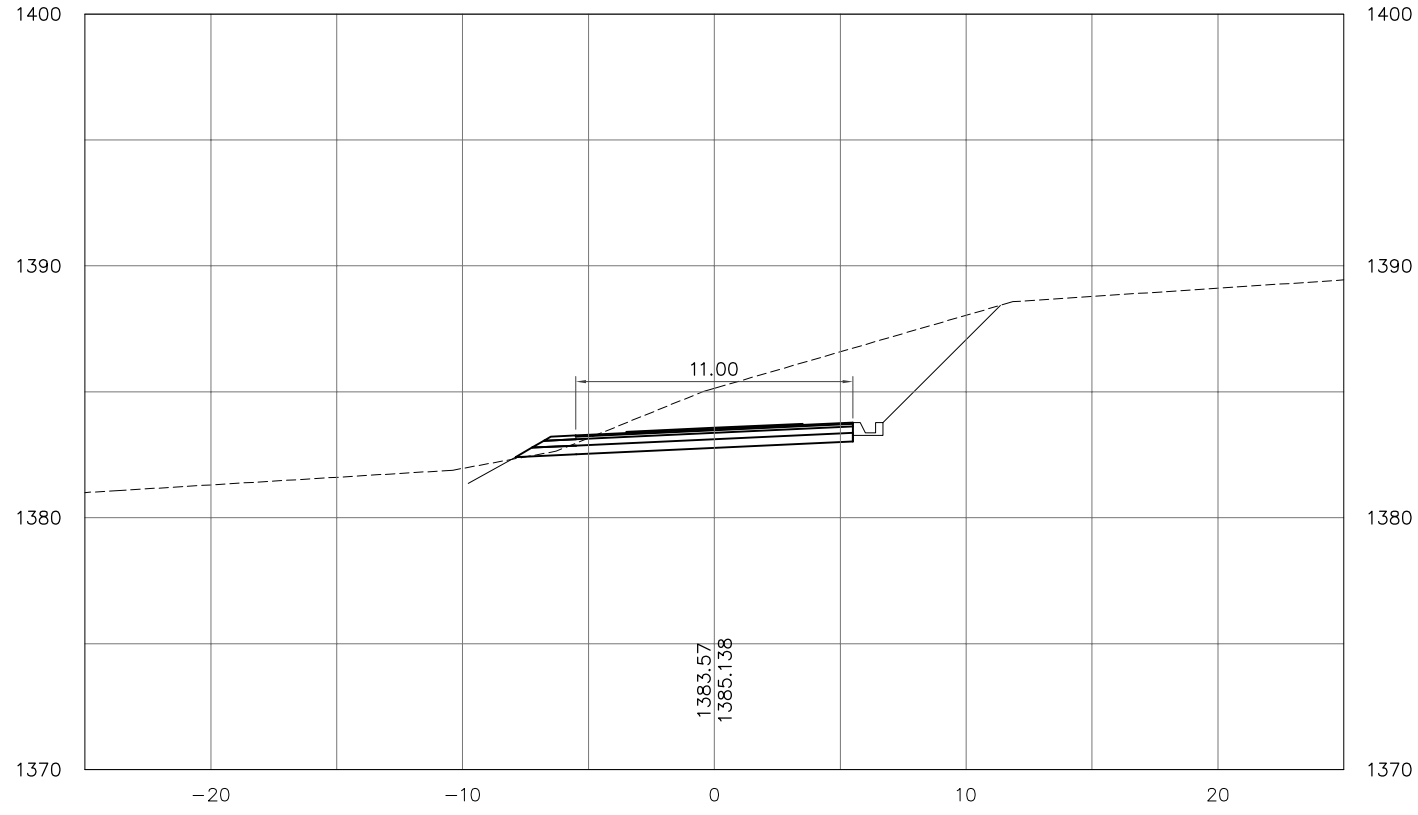
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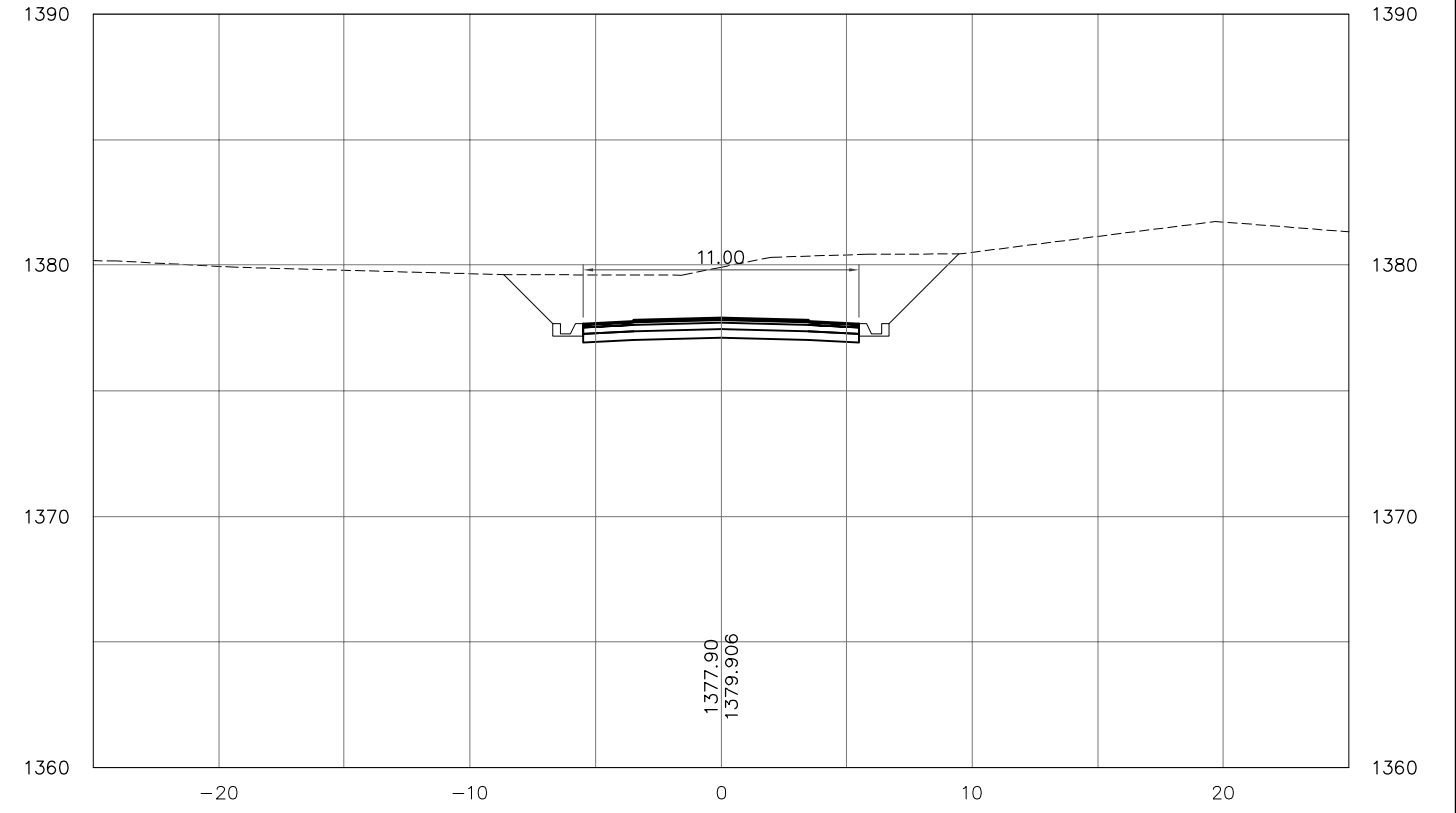
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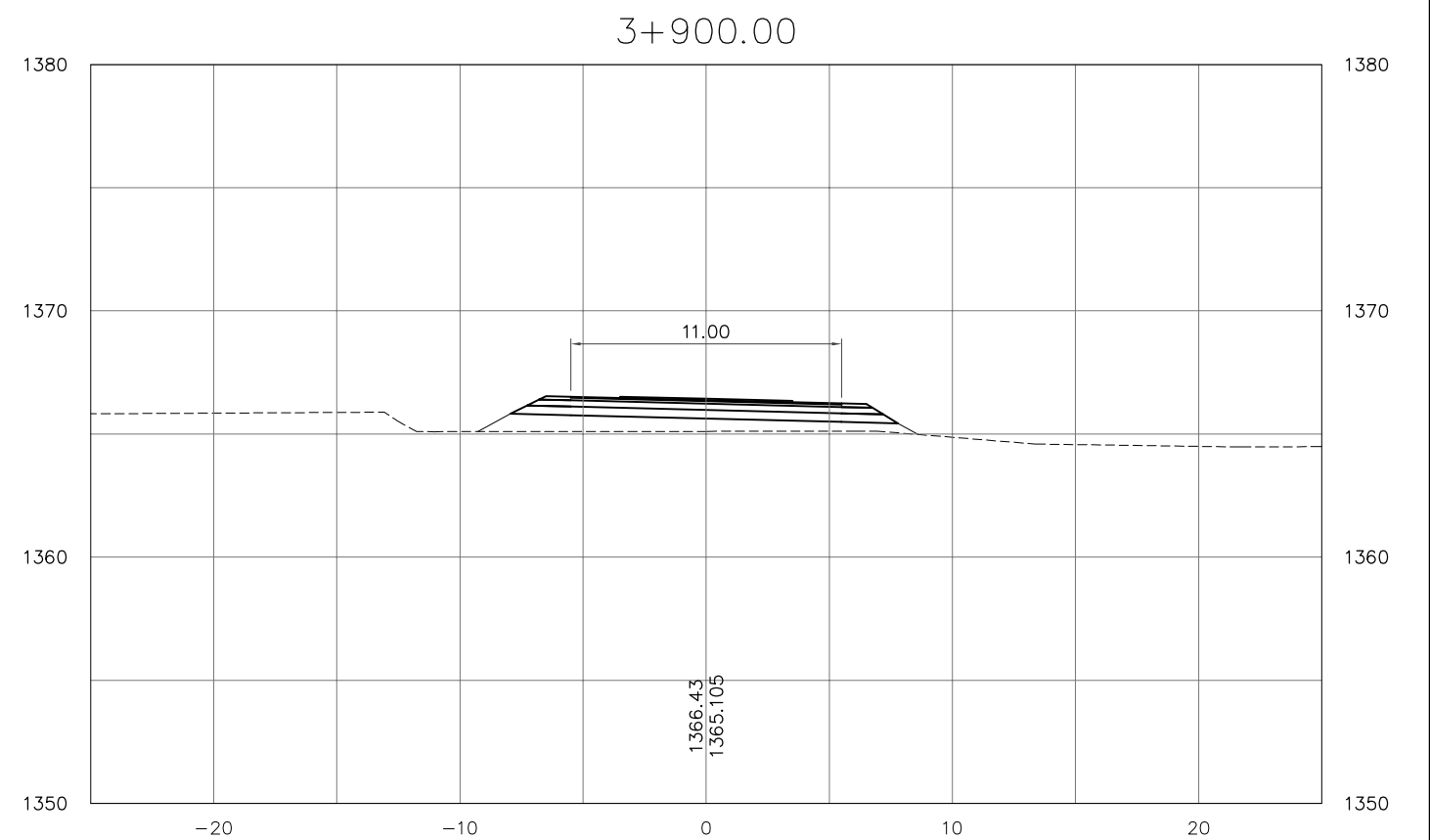
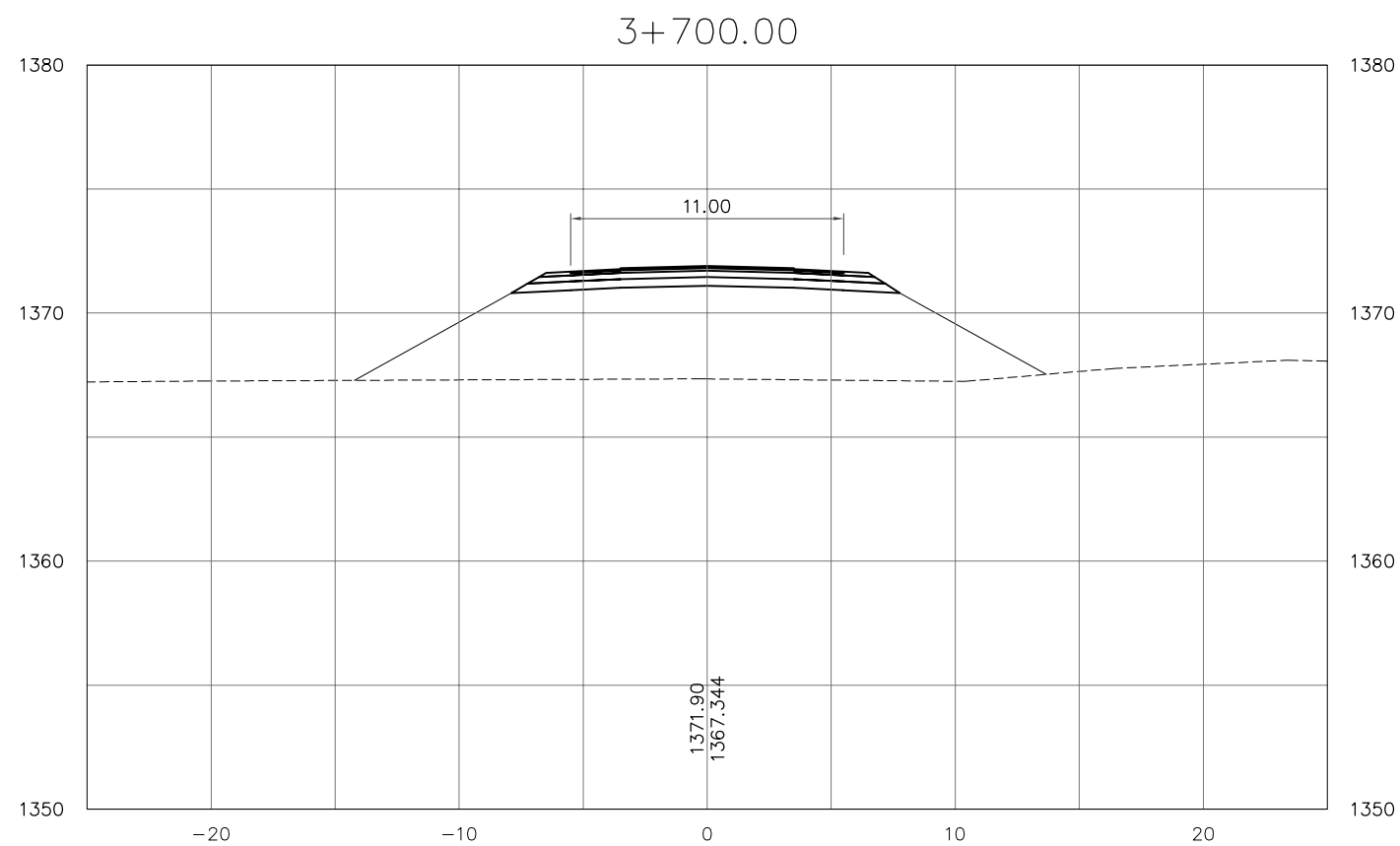
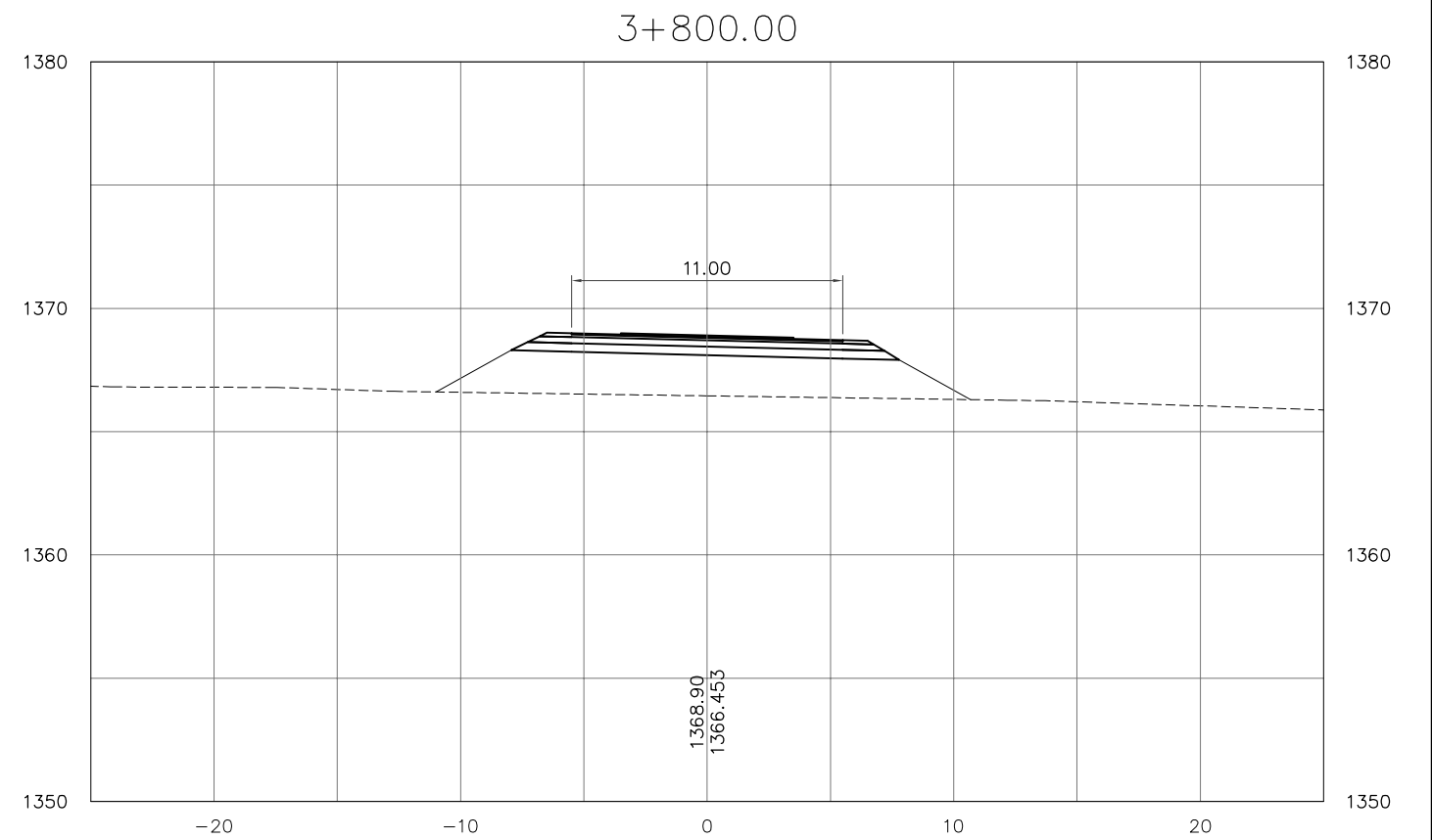
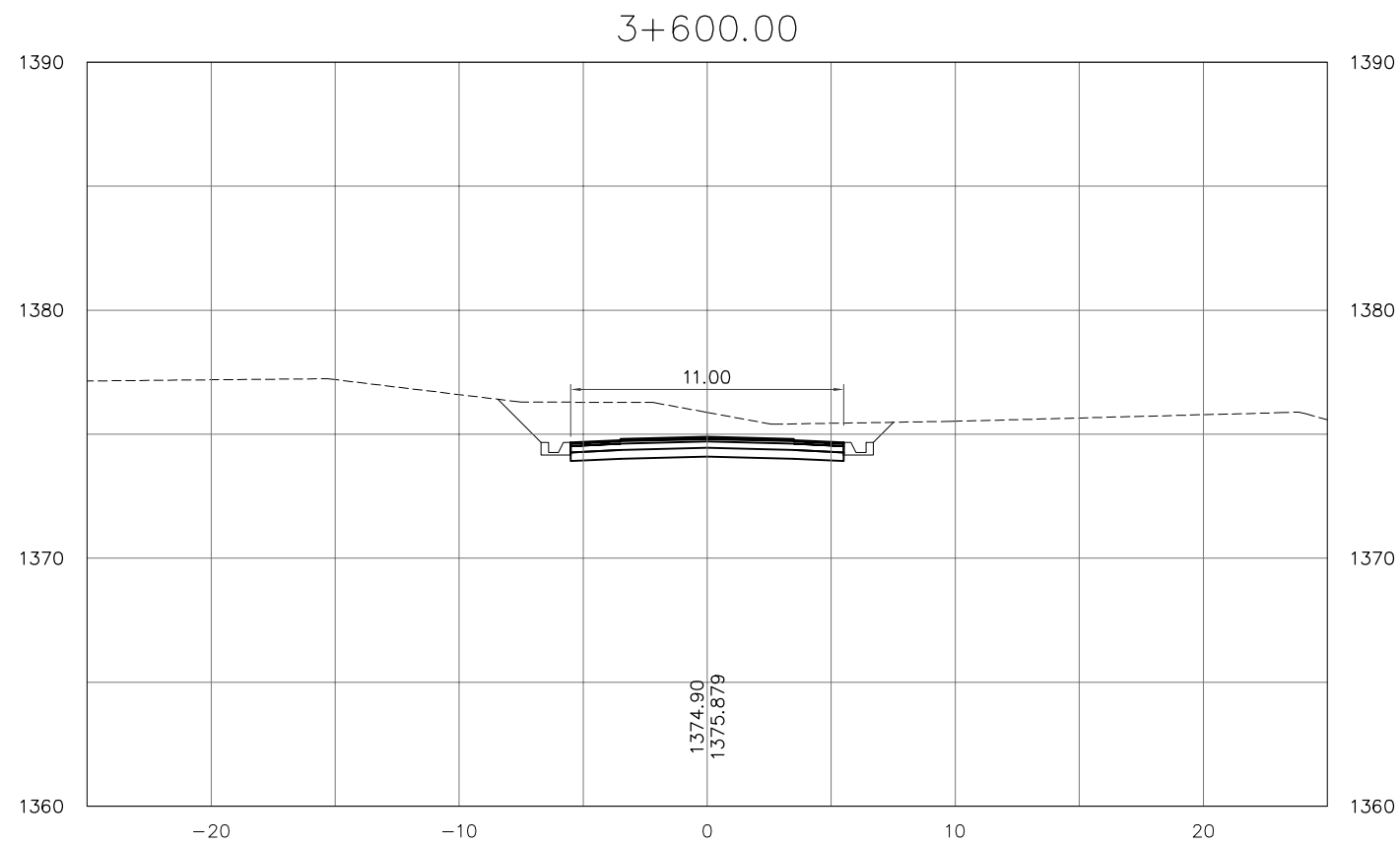
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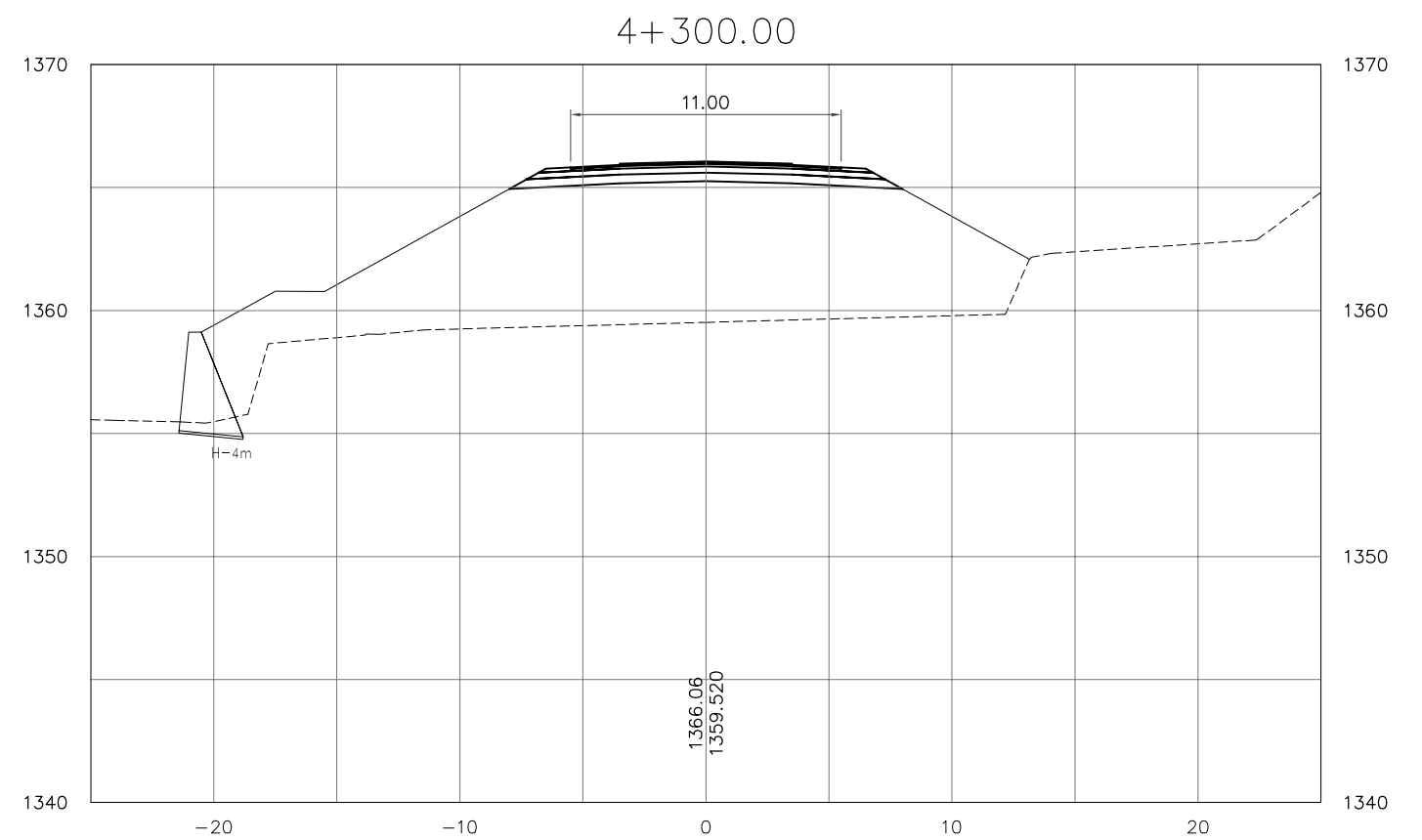
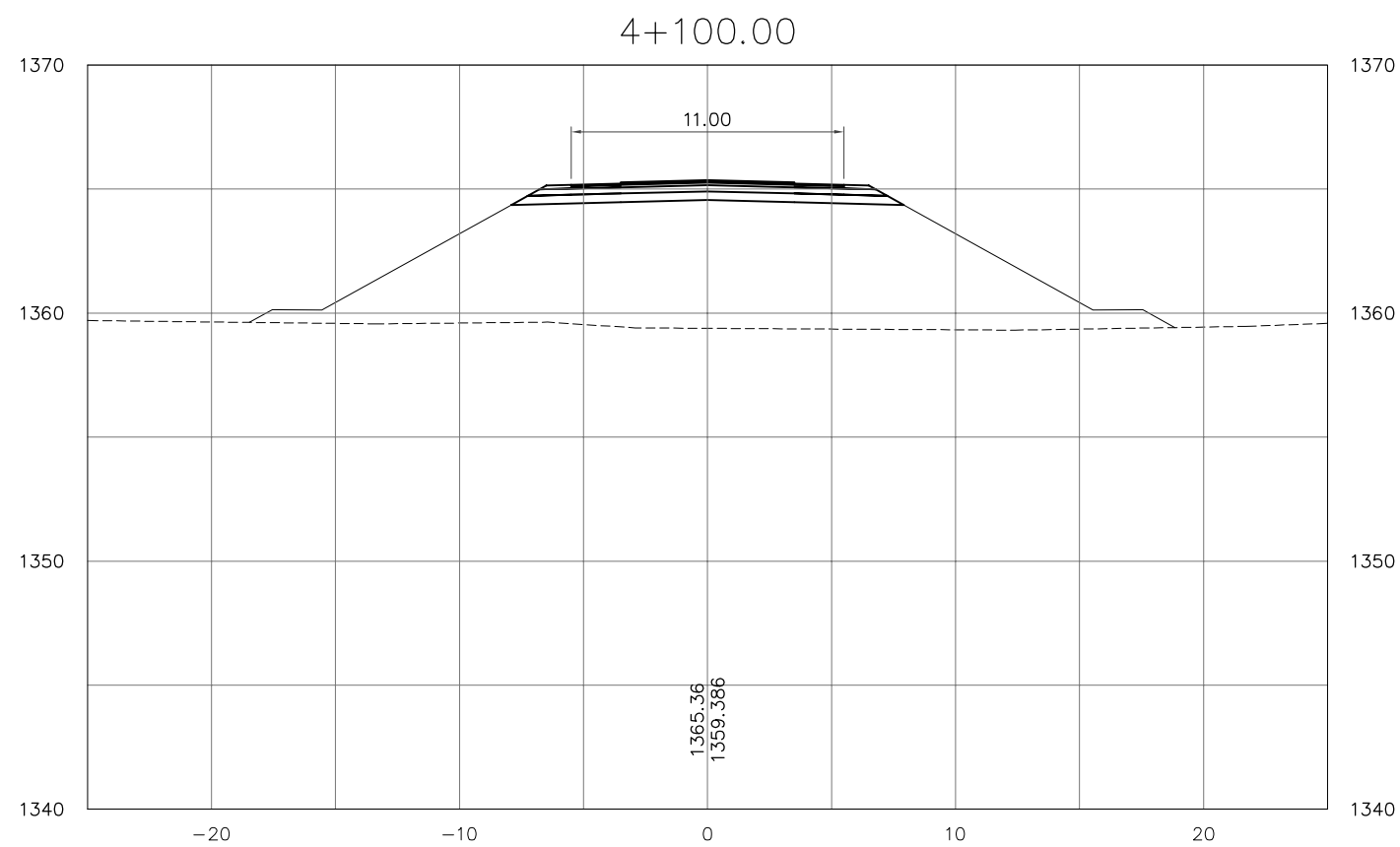
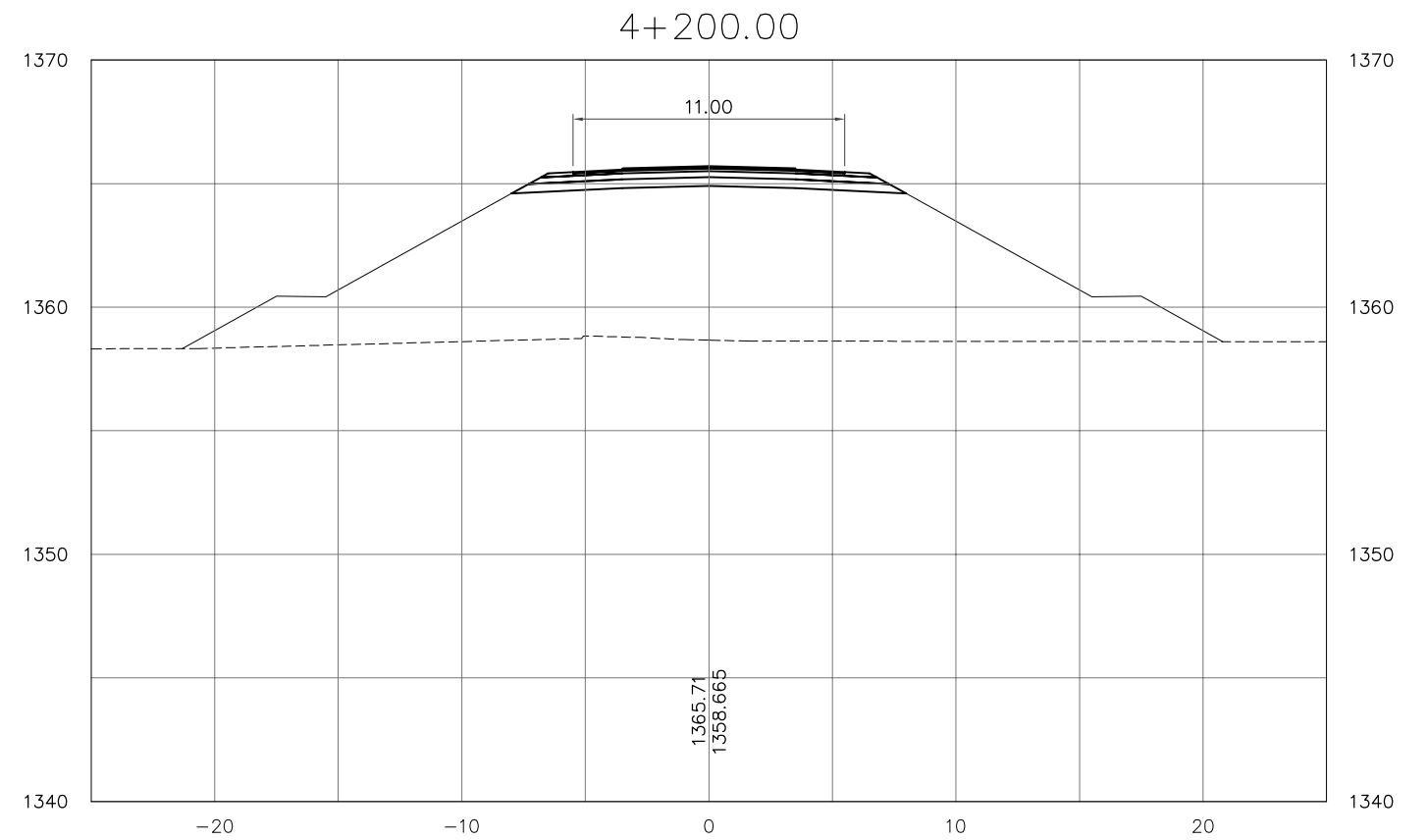
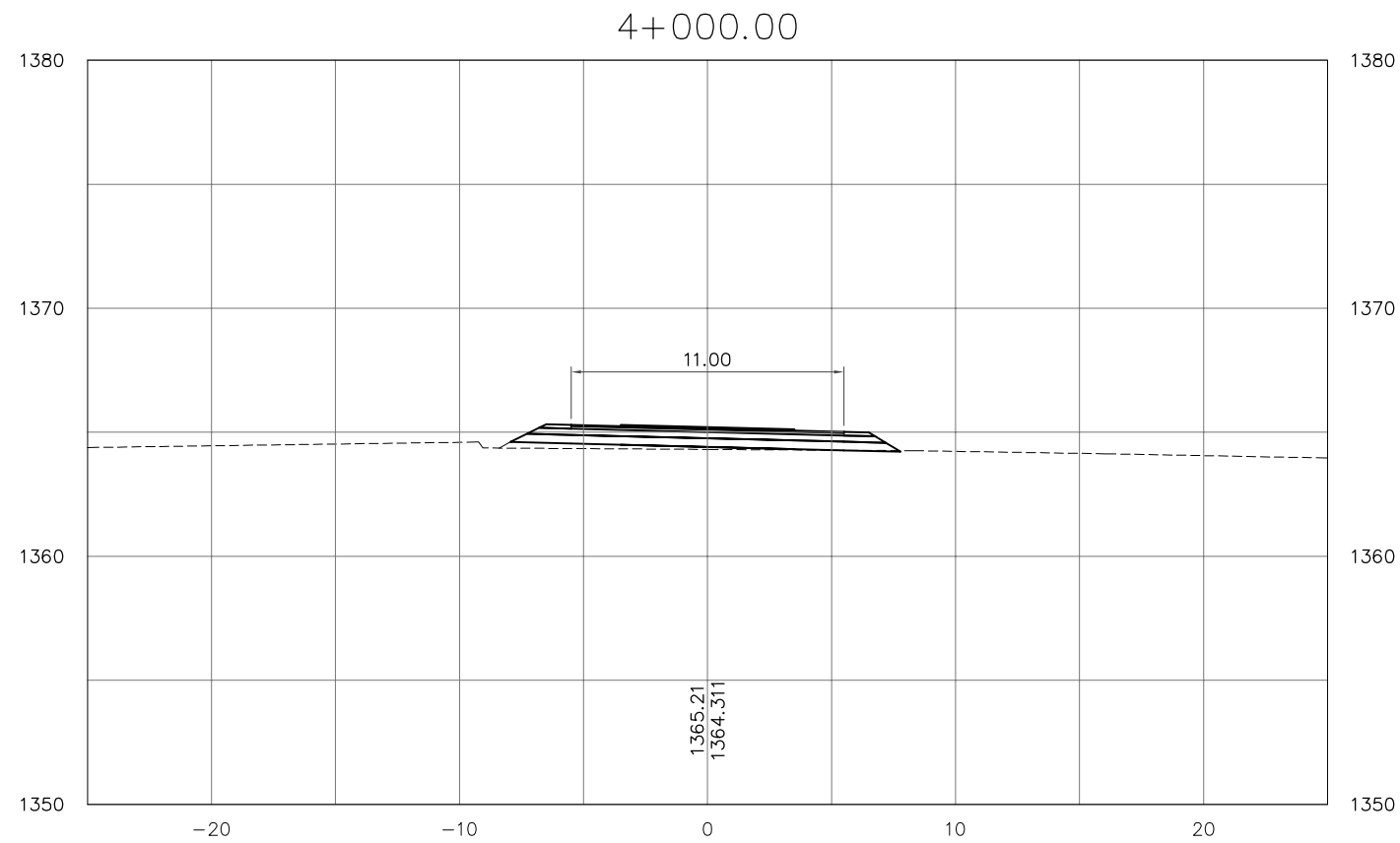
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Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	CROSS SECTIONS	1:300	30

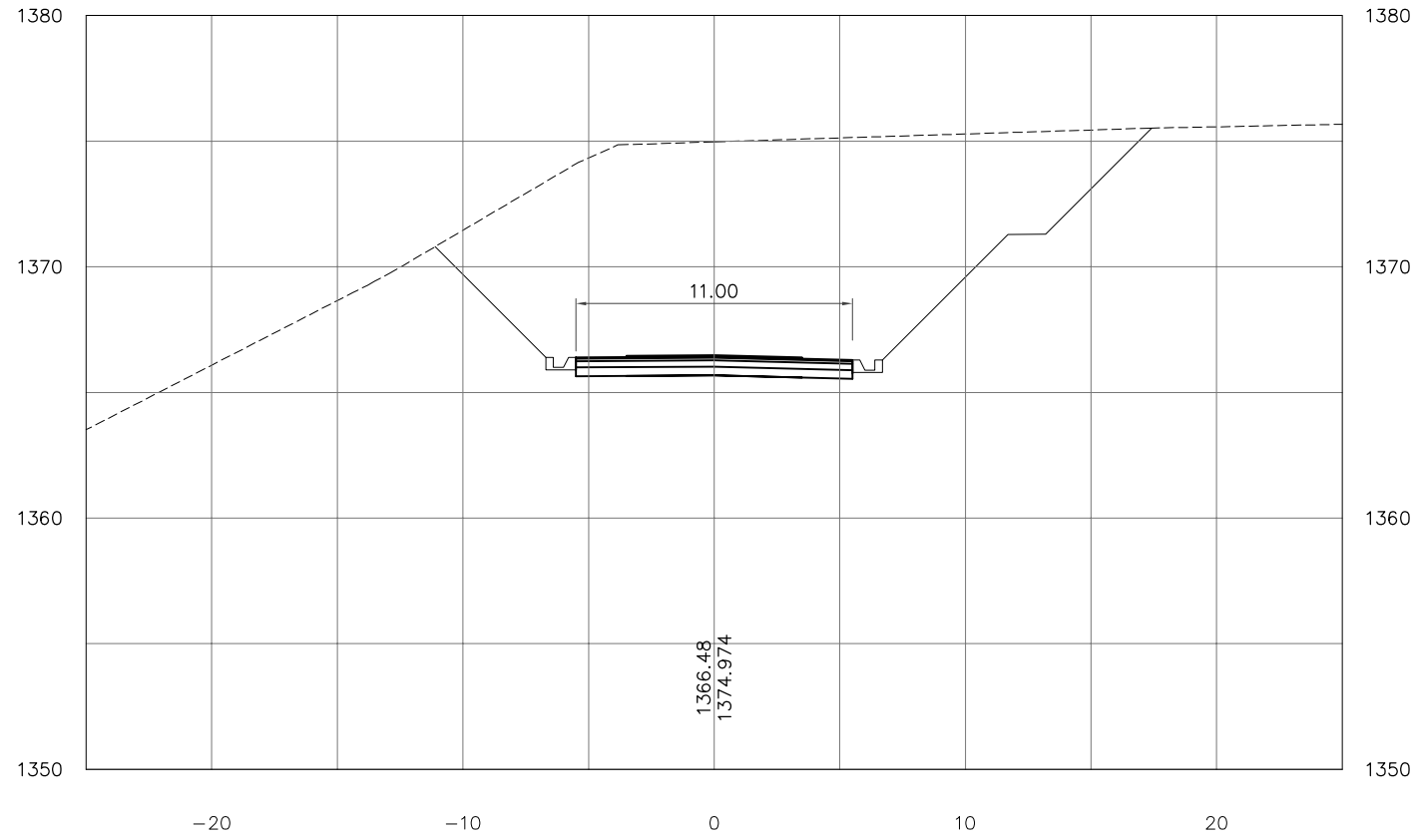


Clients:	Consultants:	Project Title:	Sheet Contents:	Scale:	SHT. NO.
 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	CROSS SECTIONS	1:300	31

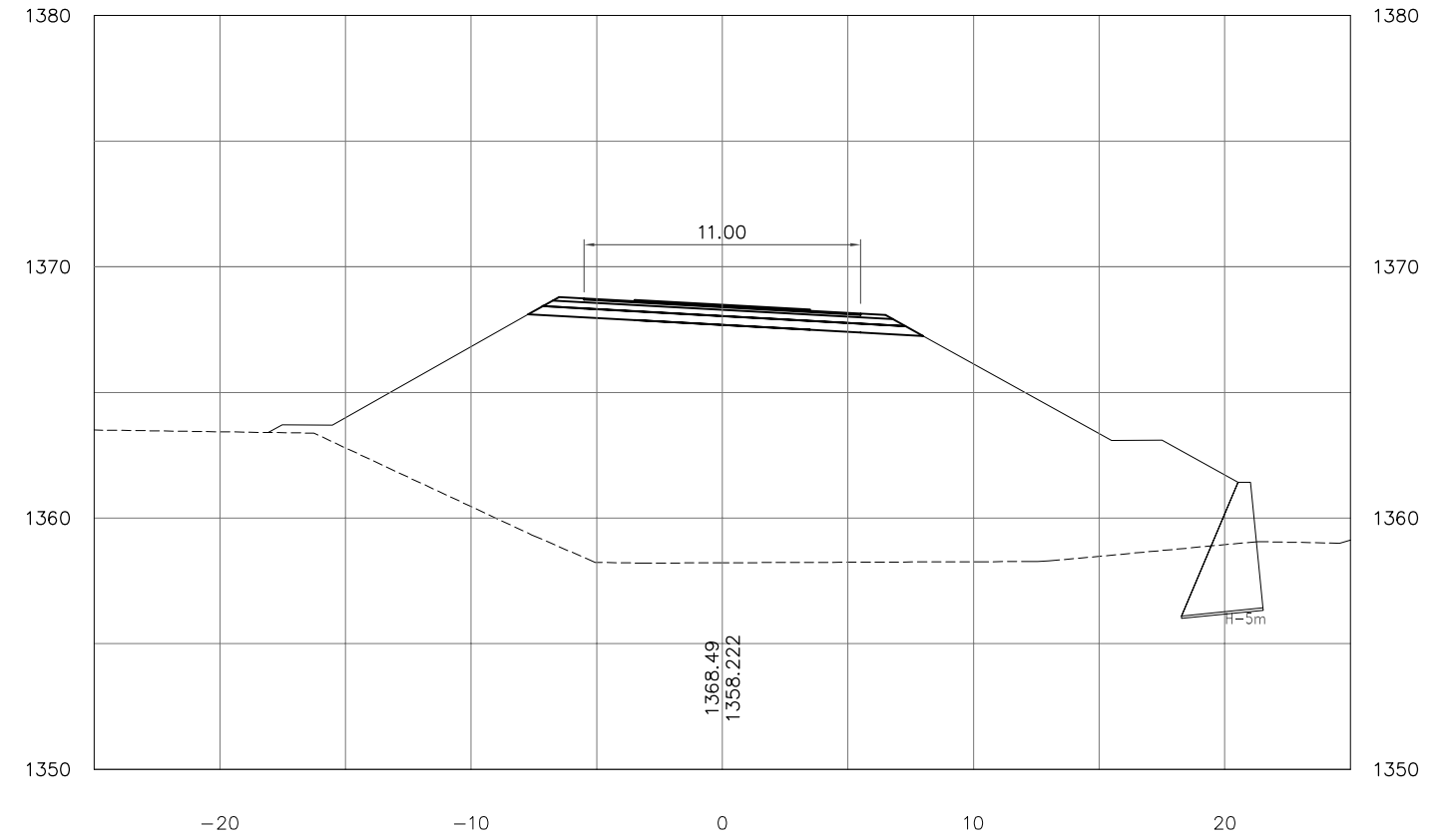


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 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	Preparatory survey for Nagdhunga Tunnel Construction in Nepal	CROSS SECTIONS	1:300
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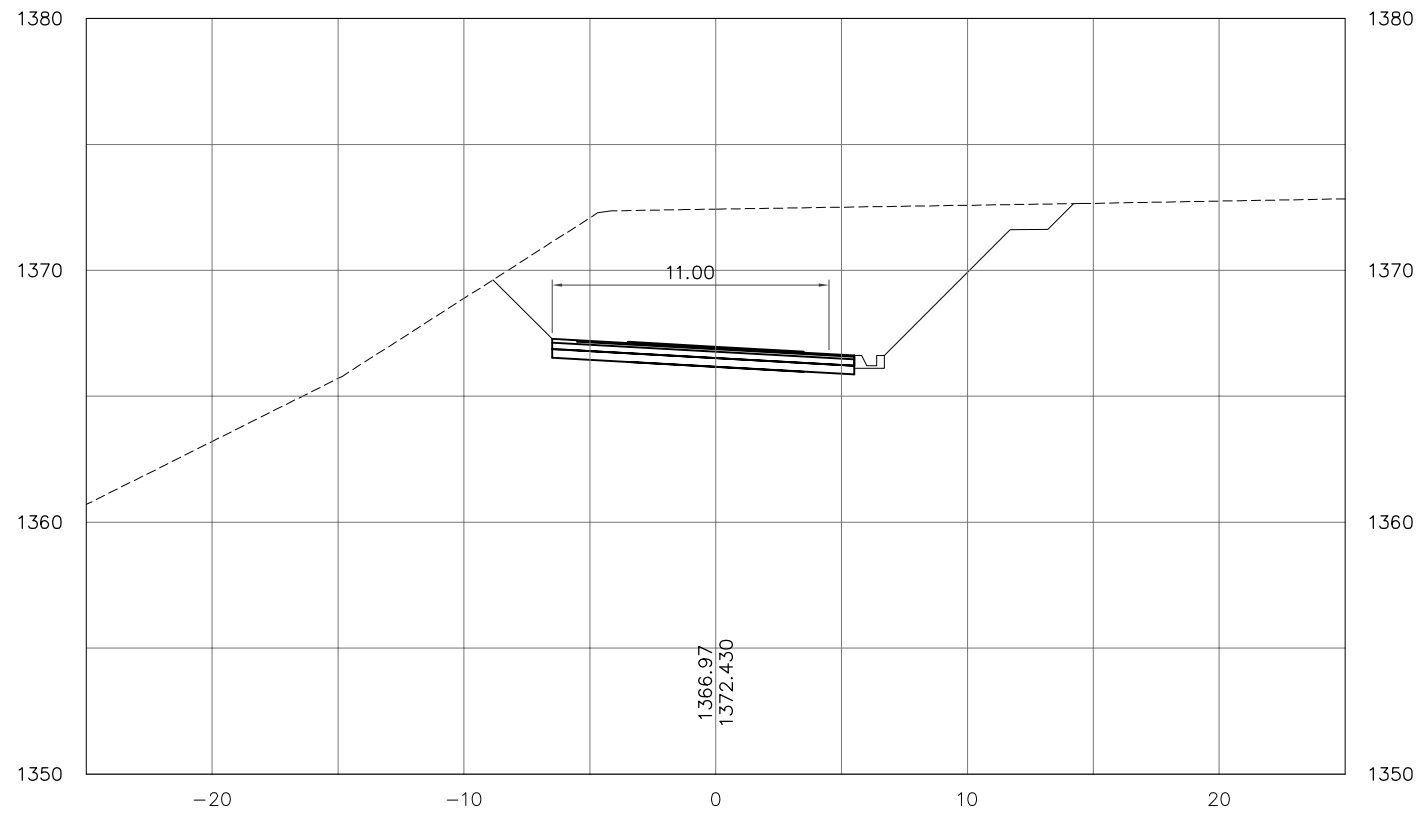
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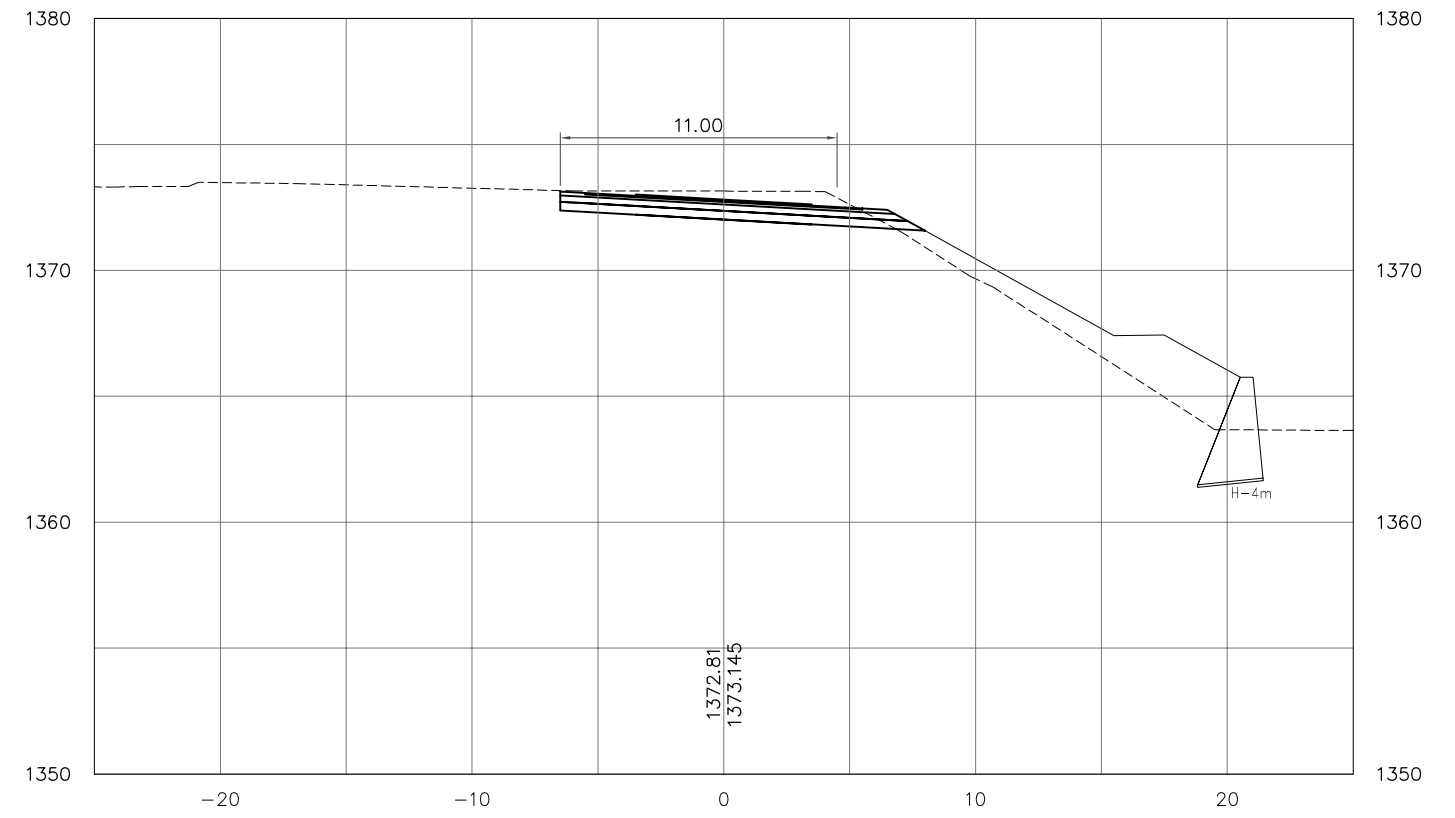
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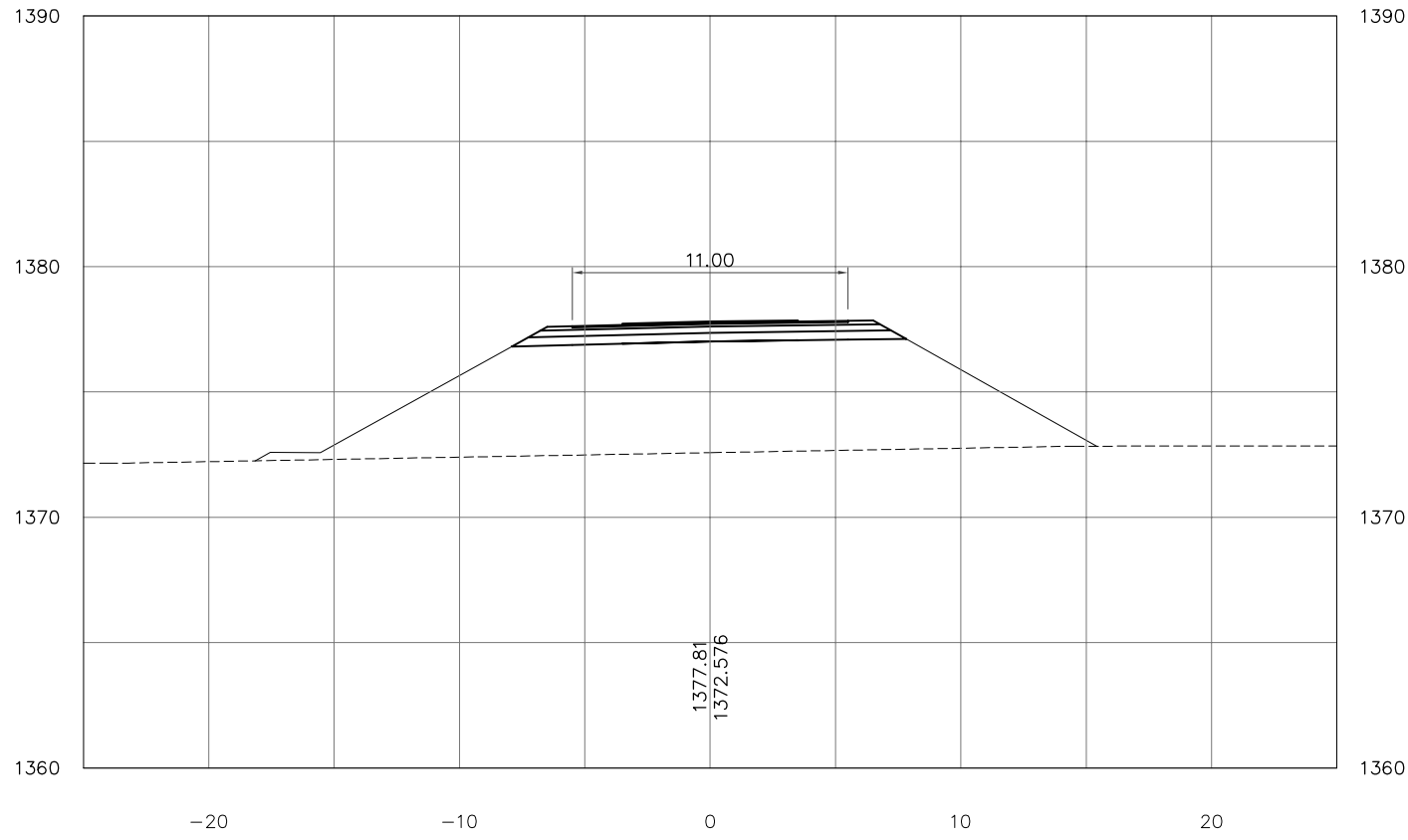


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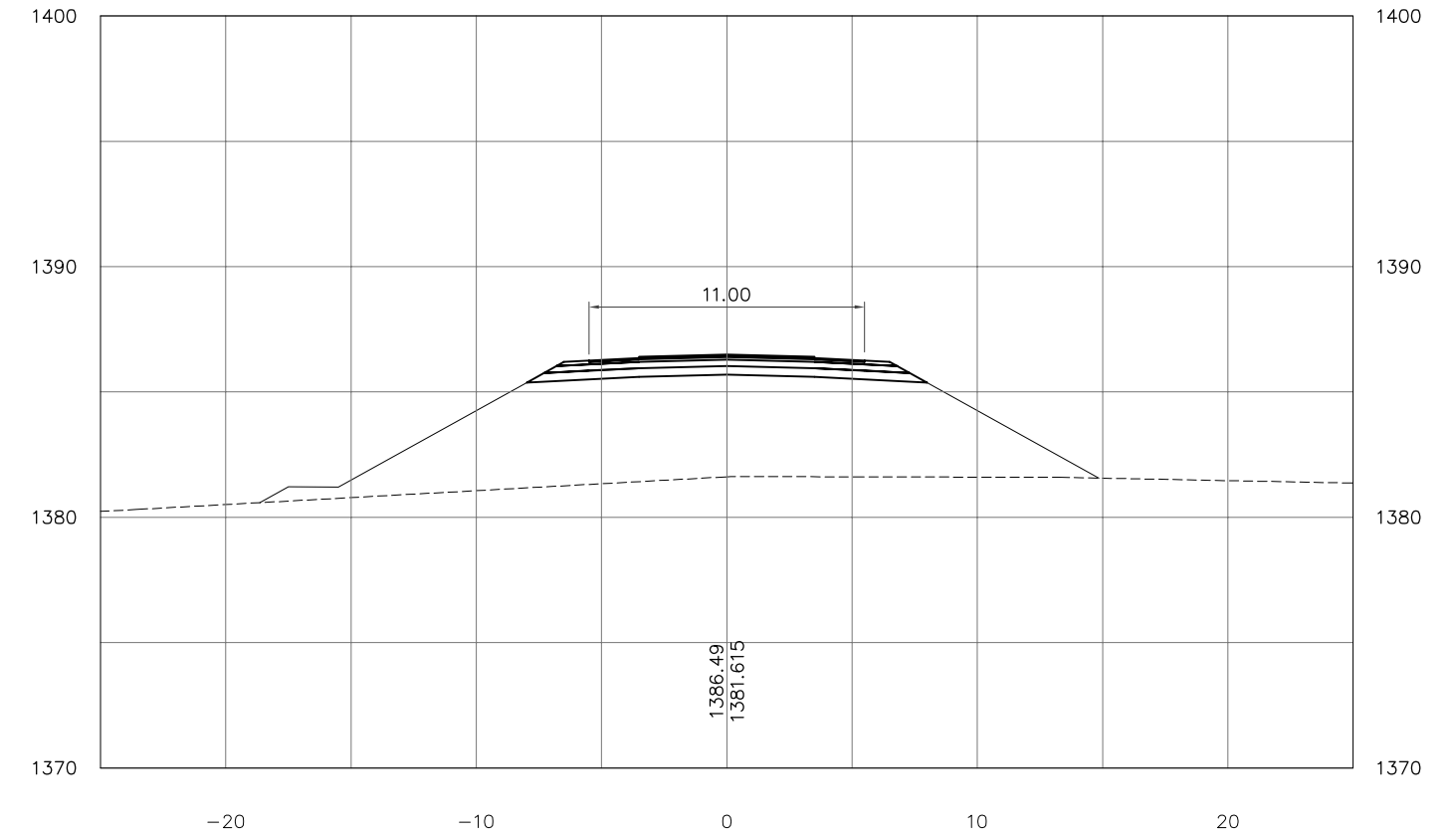


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 Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	 CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	CROSS SECTIONS	1:300	33

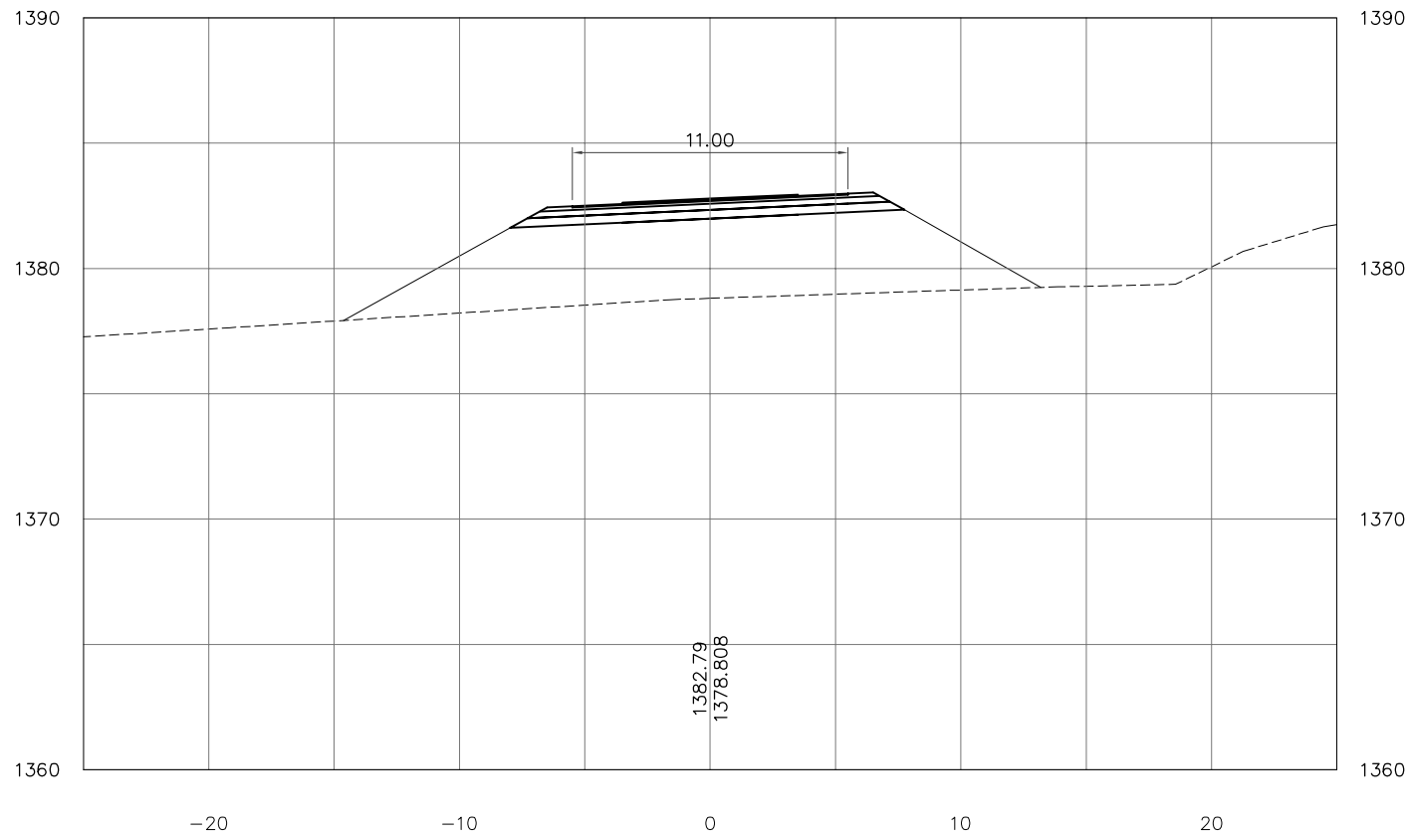
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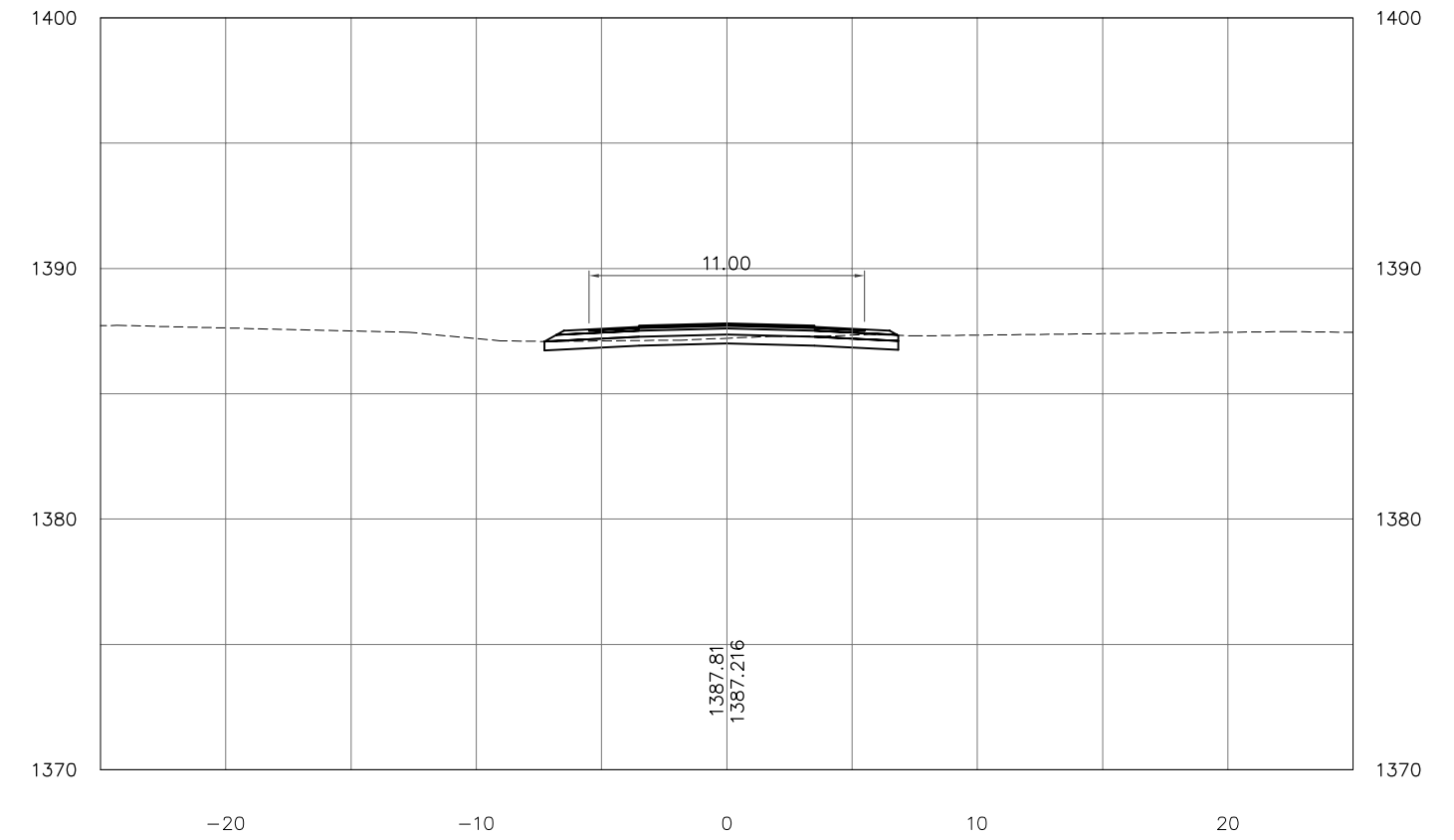
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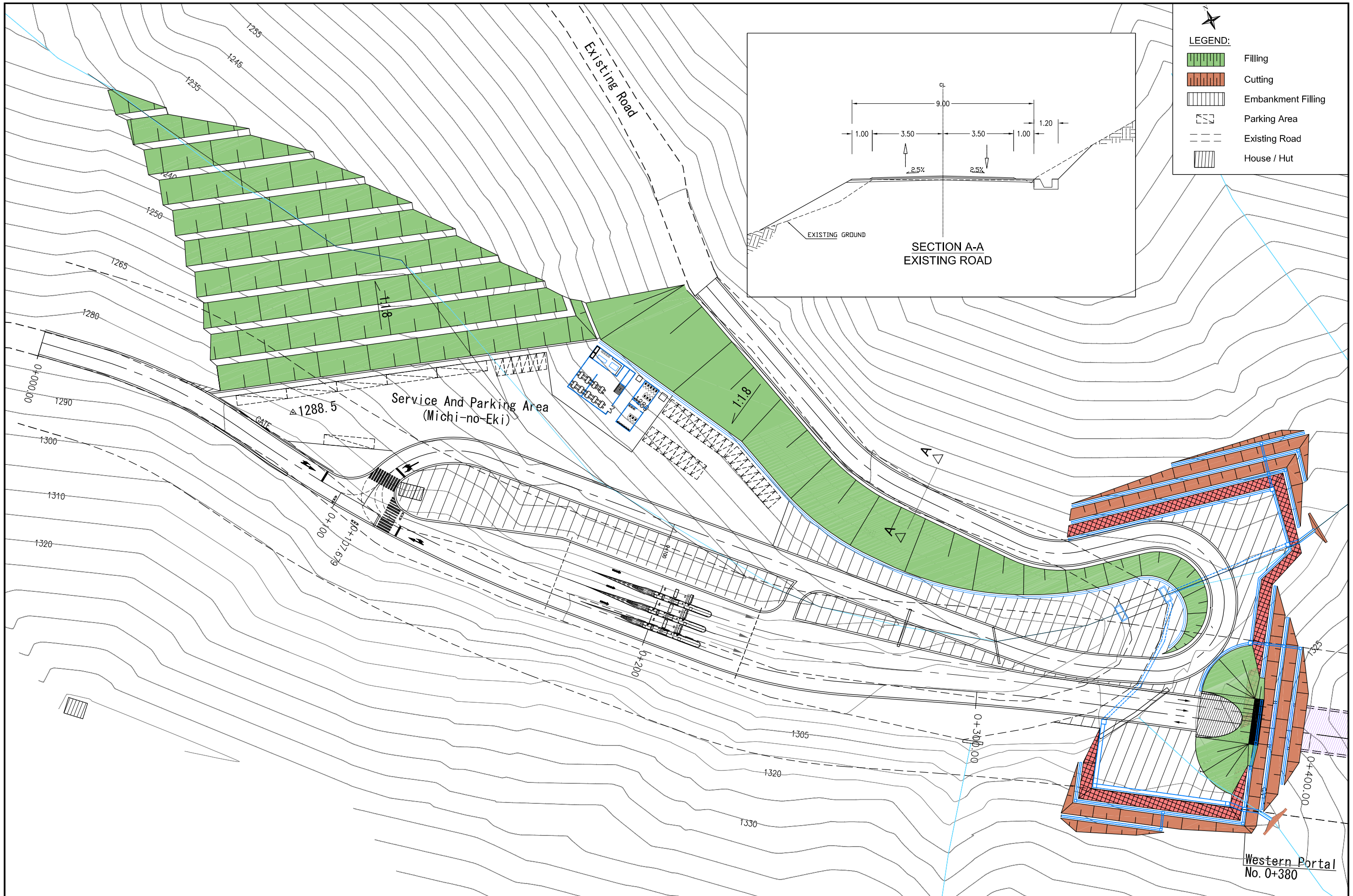








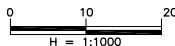
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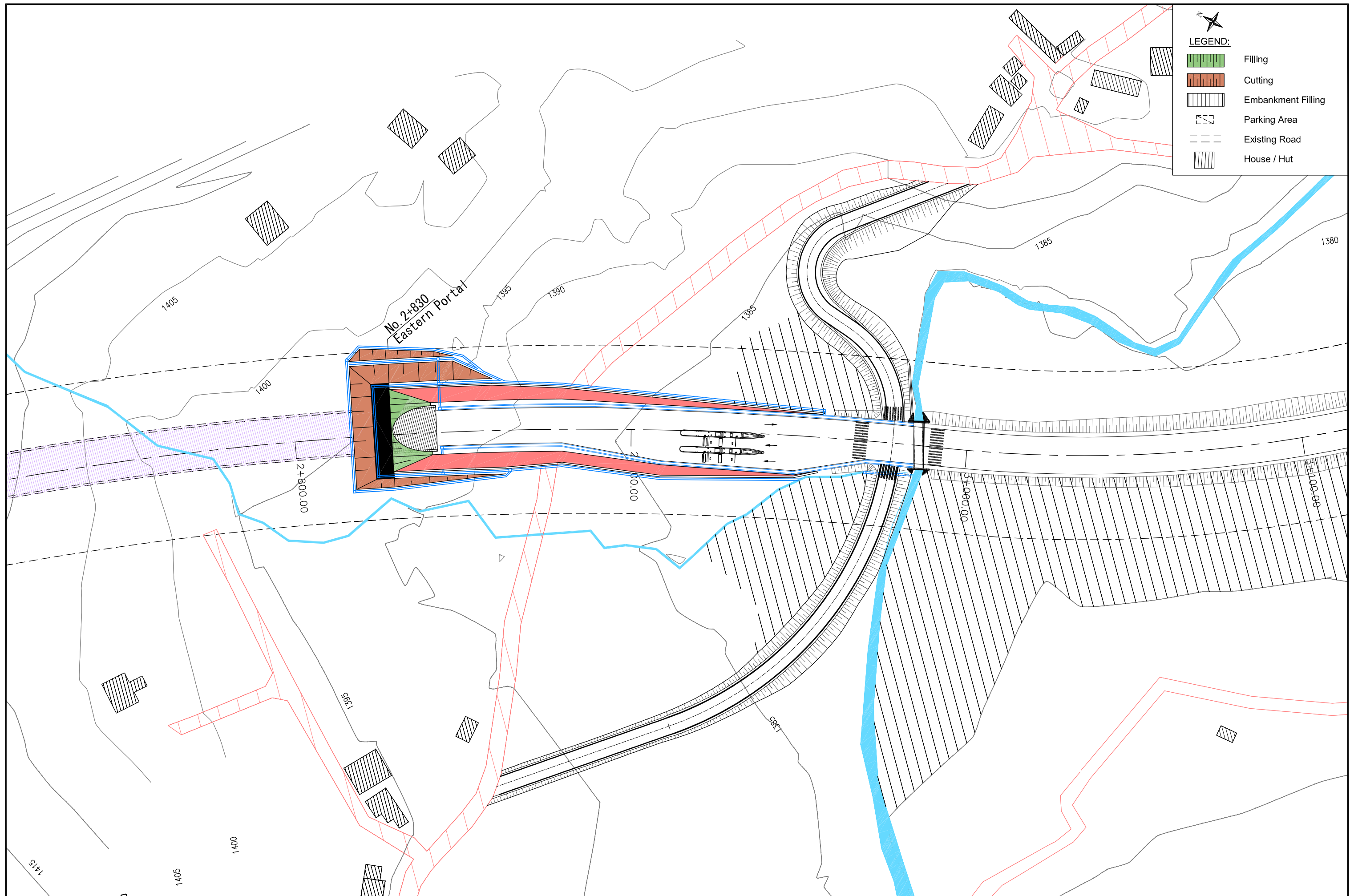


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


TUNNEL PORTAL







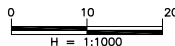


Clients:  Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	Consultants:  CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	Project Title: Preparatory survey for Nagdhunga Tunnel Construction in Nepal	Sheet Contents: West Portal Existing Road Arrangement	Scale:  H = 1:1000	SHT. NO. 35
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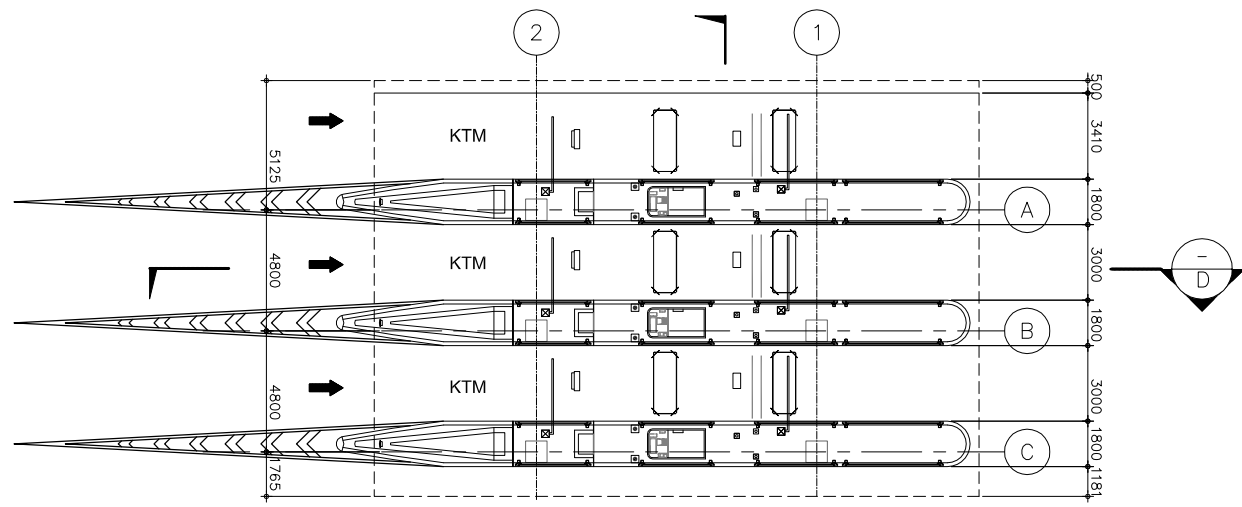


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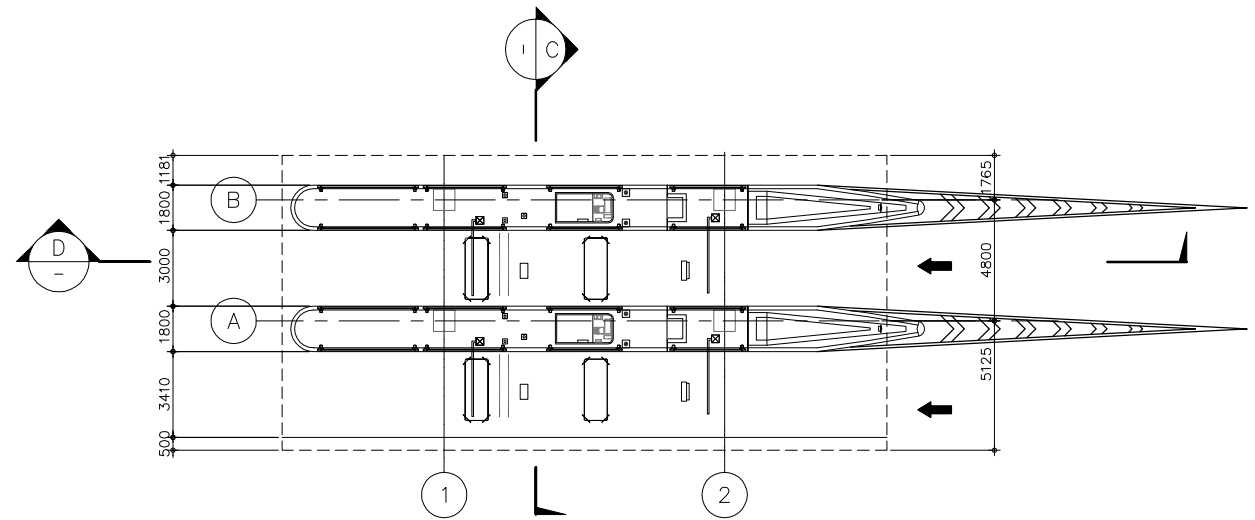
-  Filling
-  Cutting
-  Embankment Filling
-  Parking Area
-  Existing Road
-  House / Hut

<p>Clients:</p>  Japan International Cooperation Agency	 Department of Roads Ministry of Physical Infrastructure and Transport Federal Democratic Republic of Nepal	<p>Consultants:</p>  CTI Engineering International Co., Ltd.  Tonichi Engineering Consultants, Inc.  Metropolitan Expressway Co., Ltd.  Oriental Consultants, Co., Ltd.	<p>Project Title:</p> Preparatory survey for Nagdhunga Tunnel Construction in Nepal	<p>Sheet Contents:</p> East Portal Existing Road Arrangement	<p>Scale:</p>  H = 1:1000	<p>SHT. NO.</p> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">36</div>
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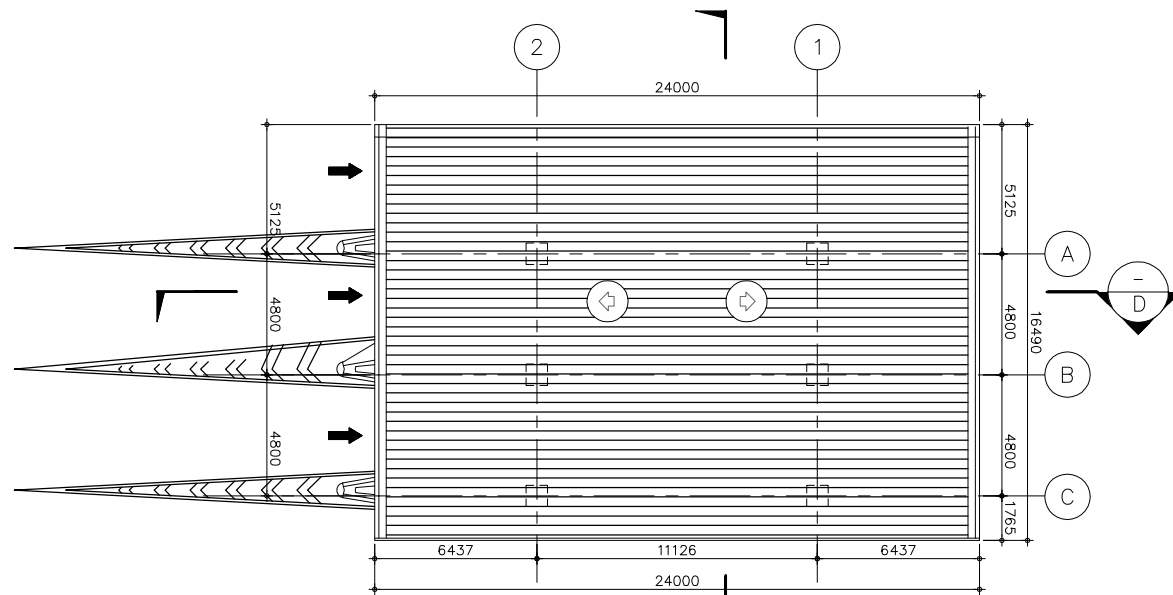
TOLL PLAZA



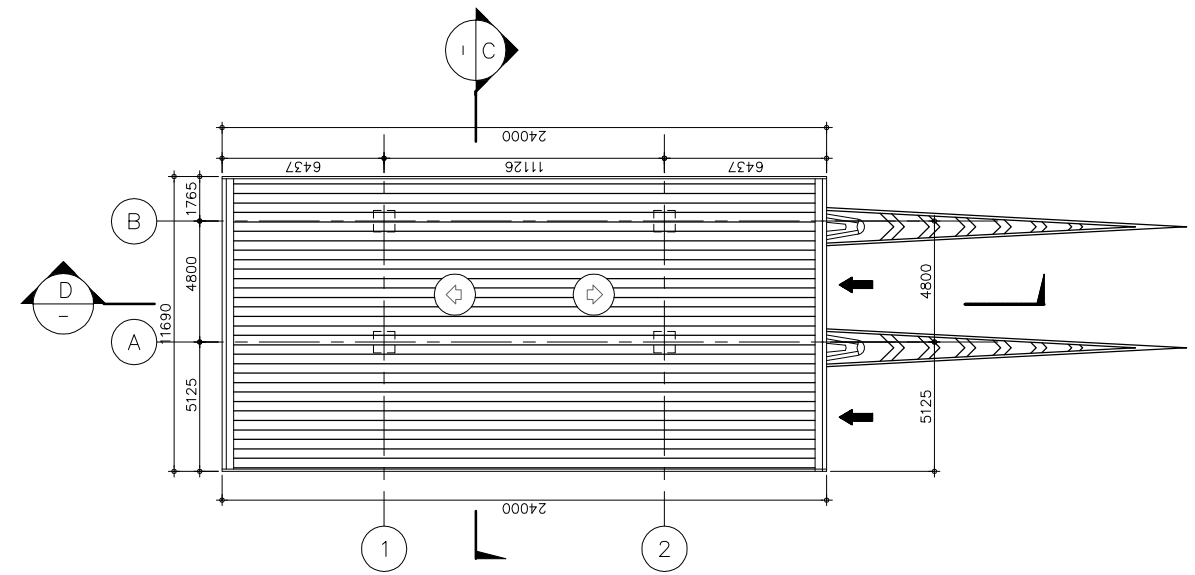
Toll Plaza Plan (West Portal Side)
Scale 1:300



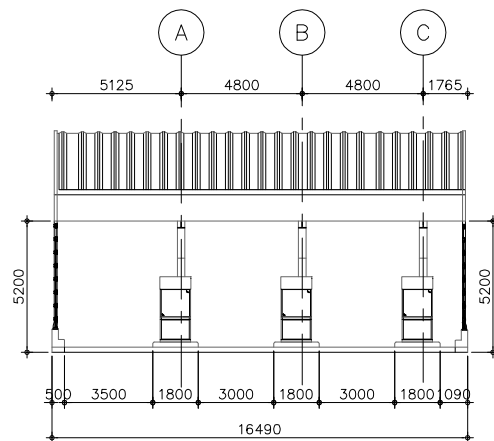
Toll Plaza Plan (East Portal Side)
Scale 1:300



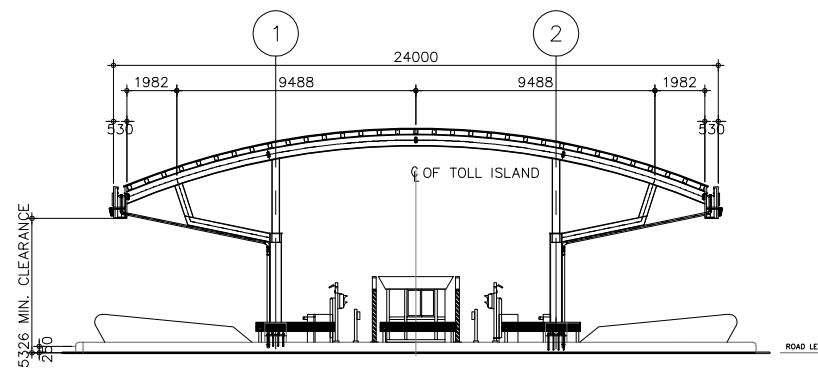
West Portal side (Roof Plan)
Scale 1:300



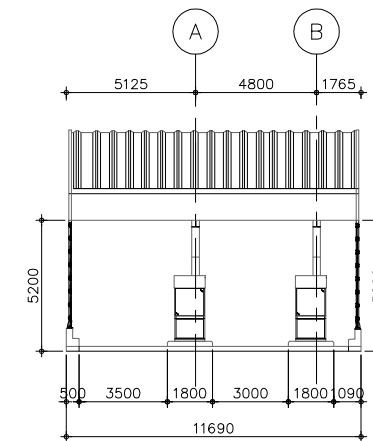
East Portal side (Roof Plan)
Scale 1:300



Section C-C
Scale 1:300



Section D-D (for East & West Portal)
Scale 1:300



Section C-C
Scale 1:300

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:

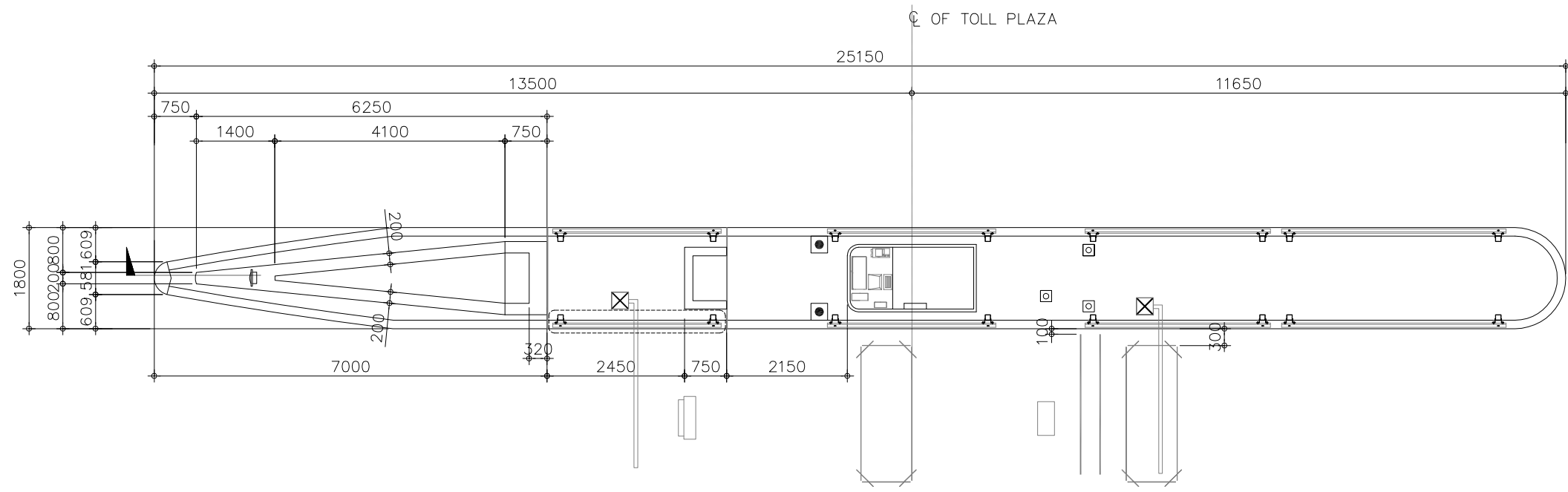
Plan and Cross-Sections of Toll Plaza

Scale:

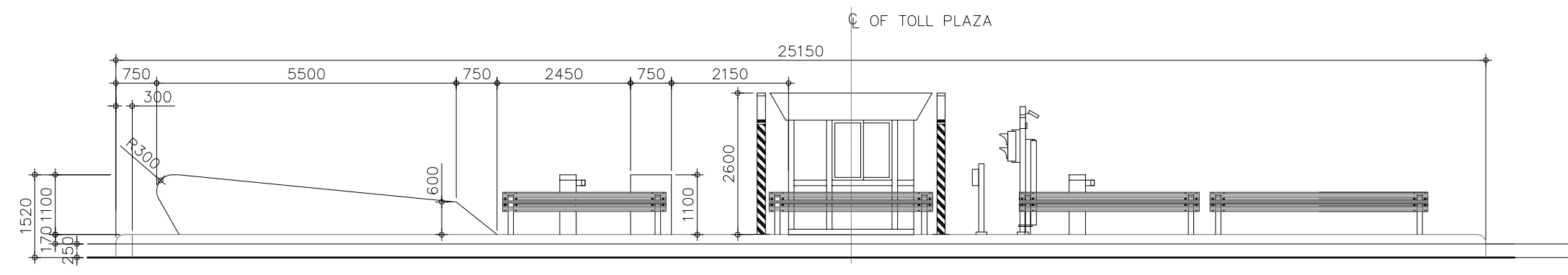
1:300

SHT. NO.







37



Toll Island Plan
Scale 1:100



Toll Island Section
Scale 1:100

Clients:  Japan International Cooperation Agency	 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 Cross-Sections of Toll Plaza	Scale: 1:300	SHT. NO. 38
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