

MISP AND ESMP DETAILED DRAWINGS

S.No.	Title	Drawing No.
1	DEBRIS DISPOSAL LOCATION LAYOUT PLAN	HP/RAG-BHA/DD-01
2	DEBRIS DISPOSAL LOCATION LAYOUT PLAN	HP/RAG-BHA/DD-02
3	ENHANCEMENT OF DRINKING WATER STRUCTURE	HP/RAG-BHA/DW-01 & 02
4	RENOVATION OF RELIGIOUS SHRINE	HP/RAG-BHA/RS-01 & 02
5	SEASONAL STREAMS LOCATION PLAN	HP/RAG-BHA/SS-01
6	SUGGESTED QUARRY AND BORROW AREA LOCATIONS	HP/RAG-BHA/QB-01
7	TYPICAL LAYOUT OF CONSTRUCTION CAMP	HP/RAG-BHA/TCC-01
8	TYPICAL DETAILS OF SEPTIC TANK & OIL INTERCEPTOR	HP/RAG-BHA/ST01

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana – 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

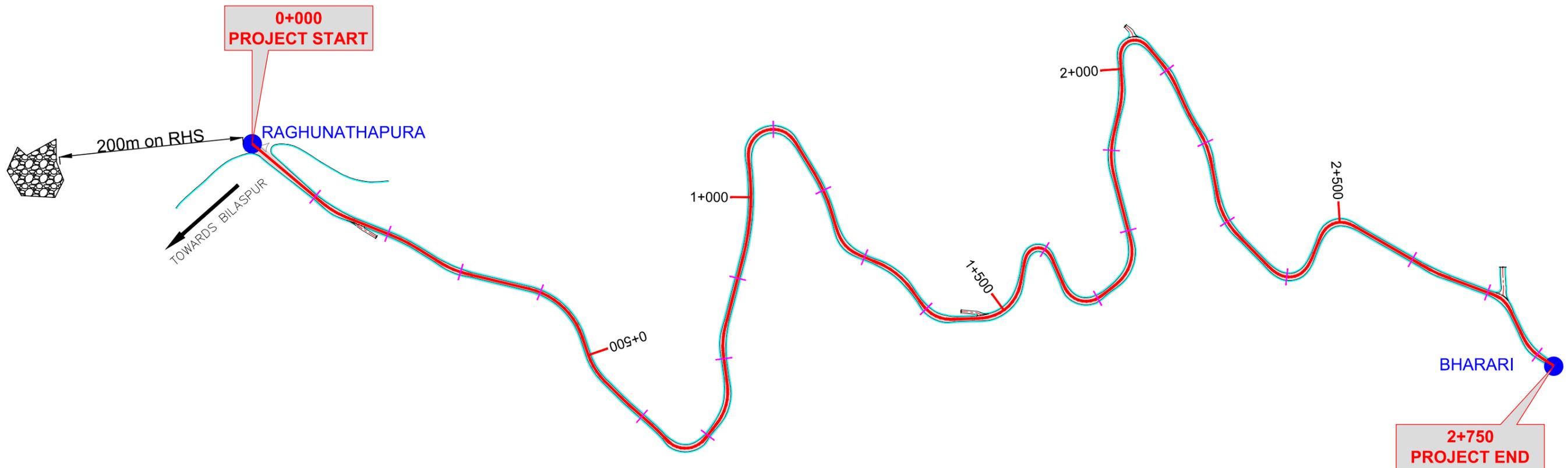
SCALE:
 NOT TO SCALE

DESIGNED	MADHUBABU
DRAWN	DANIEL
CHECKED	CHANDRA/ASHIK
APPROVED	PRADEEP KAPLA

TITLE : MISP AND ESMP DETAILED DRAWINGS INDEX
 REV. 0
 SIZE : A3

DRAWING NO : HP/RAH-BHA/INDEX

ROAD NAME : PACKAGE - IV
 UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.
 SHEET 01 OF 01



NOTE :-

1. THE DEBRIS DISPOSAL LOCATIONS IS 200m AWAY FROM THE START POINT OF THE ROAD AND EASY ACCESS TO THE CONTRACTOR.
2. THE ABOVE LOCATIONS ARE INDICATIVE ONLY, THE CONTRACTOR HAS TO IDENTIFY DEBRIS DISPOSAL LOCATION LOCATIONS ON HIS OWN AS PER SPECIFICATIONS AND STANDARDS AND IN CONSULTATION WITH PROJECT MANAGER.

LEGEND:-

	DEBRIS DISPOSAL LOCATION
---	--------------------------

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE:
 NOT TO SCALE

DESIGNED	MADHUBABU
DRAWN	DANIEL
CHECKED	CHANDRA/ASHIK
APPROVED	PRADEEP KAPLA

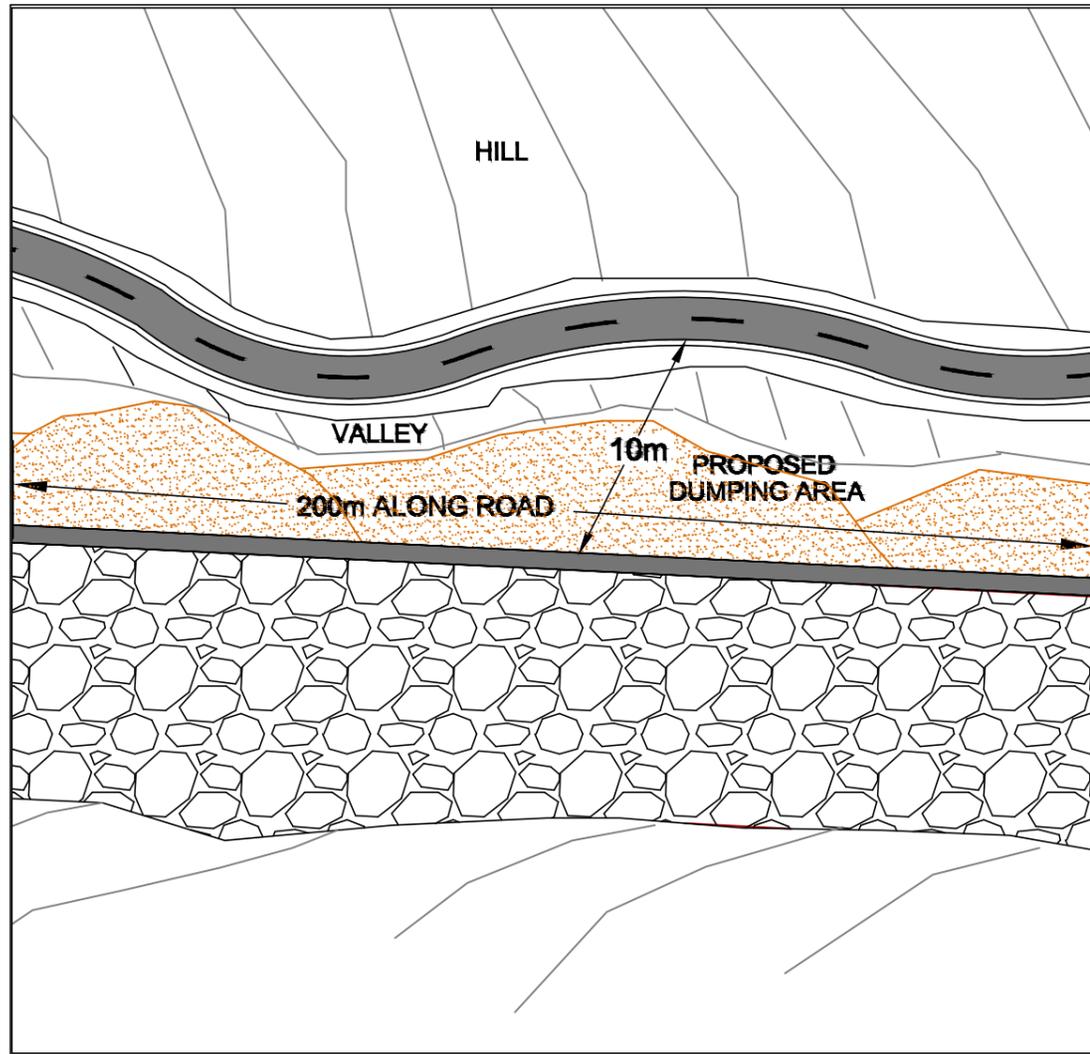
TITLE :
 SUGGESTED DEBRIS DISPOSAL LOCATIONS

DRAWING NO : HP/RAH-BHA/DD-01

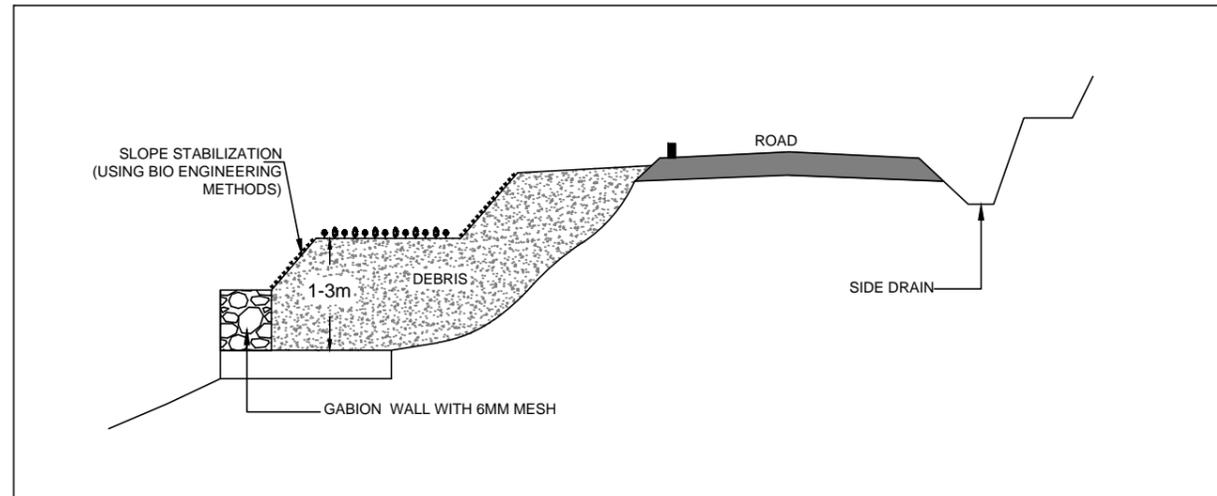
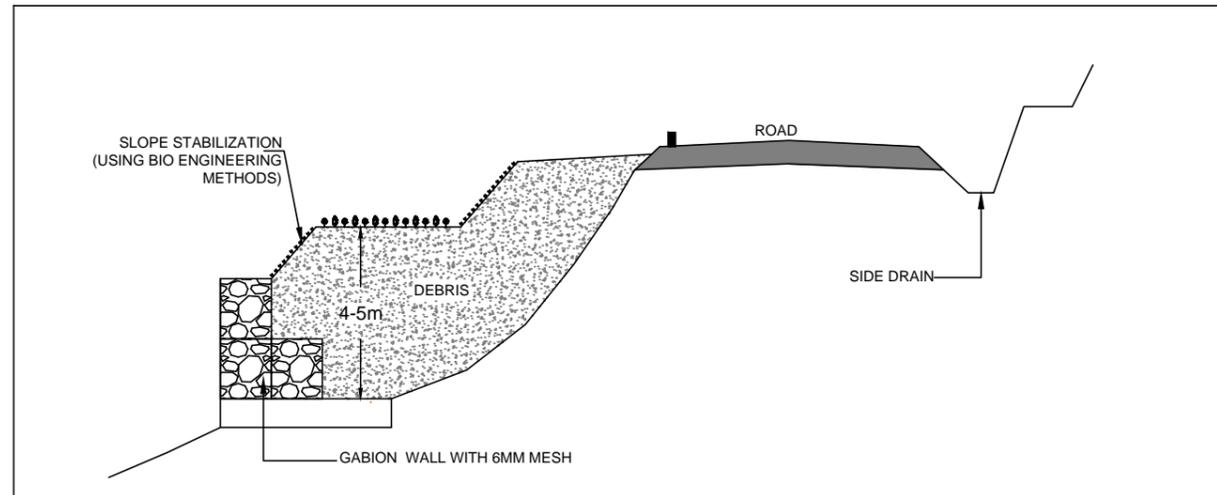
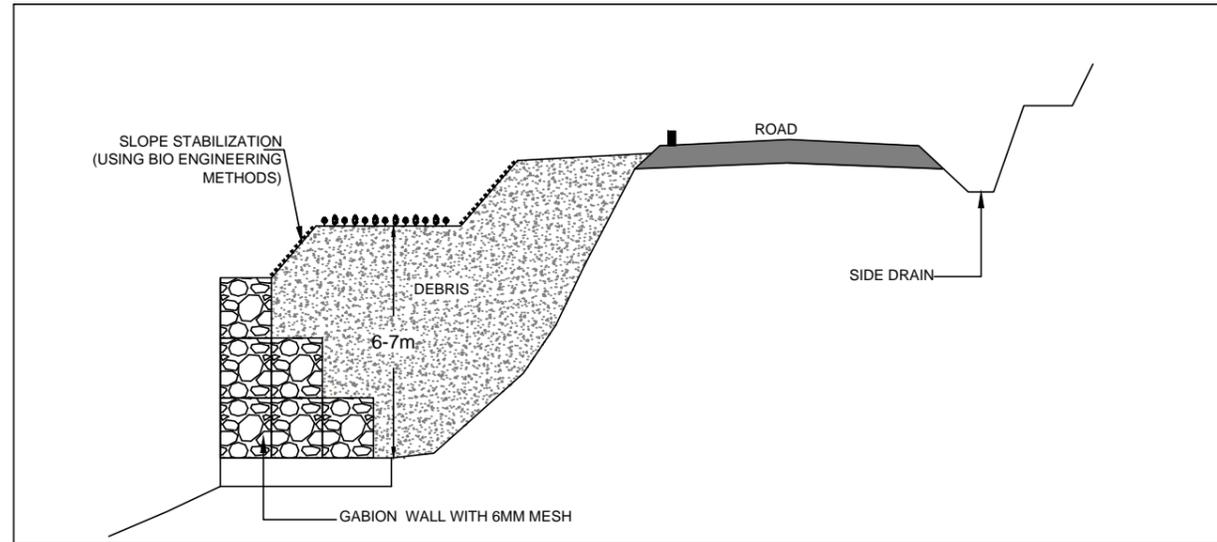
ROAD NAME :
 PACKAGE - IV
 UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.

REV.	0
SIZE :	A3

SHEET 01 OF 01



TYPICAL FRONT VIEW OF DEBRIS DISPOSAL SITE



TYPICAL CROSS SECTIONS

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE:
 NOT TO SCALE

DESIGNED MADHUBABU
 DRAWN DANIEL
 CHECKED CHANDRA/ASHIK
 APPROVED PRADEEP KAPLA

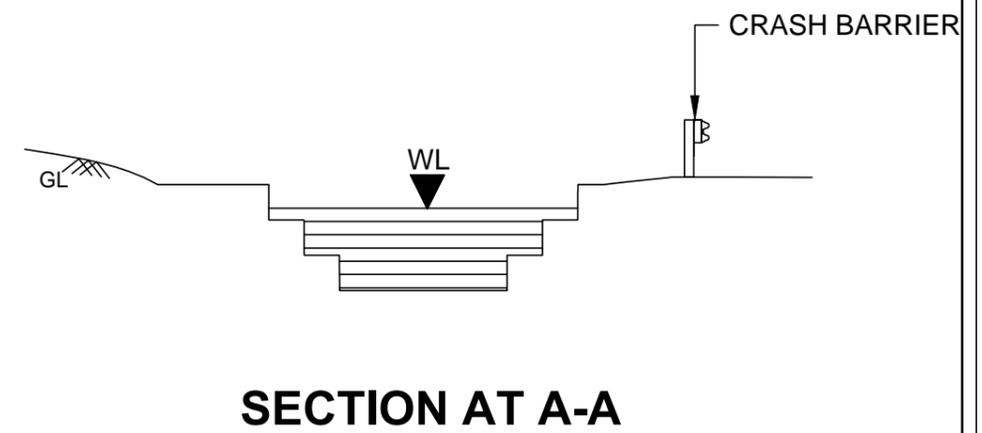
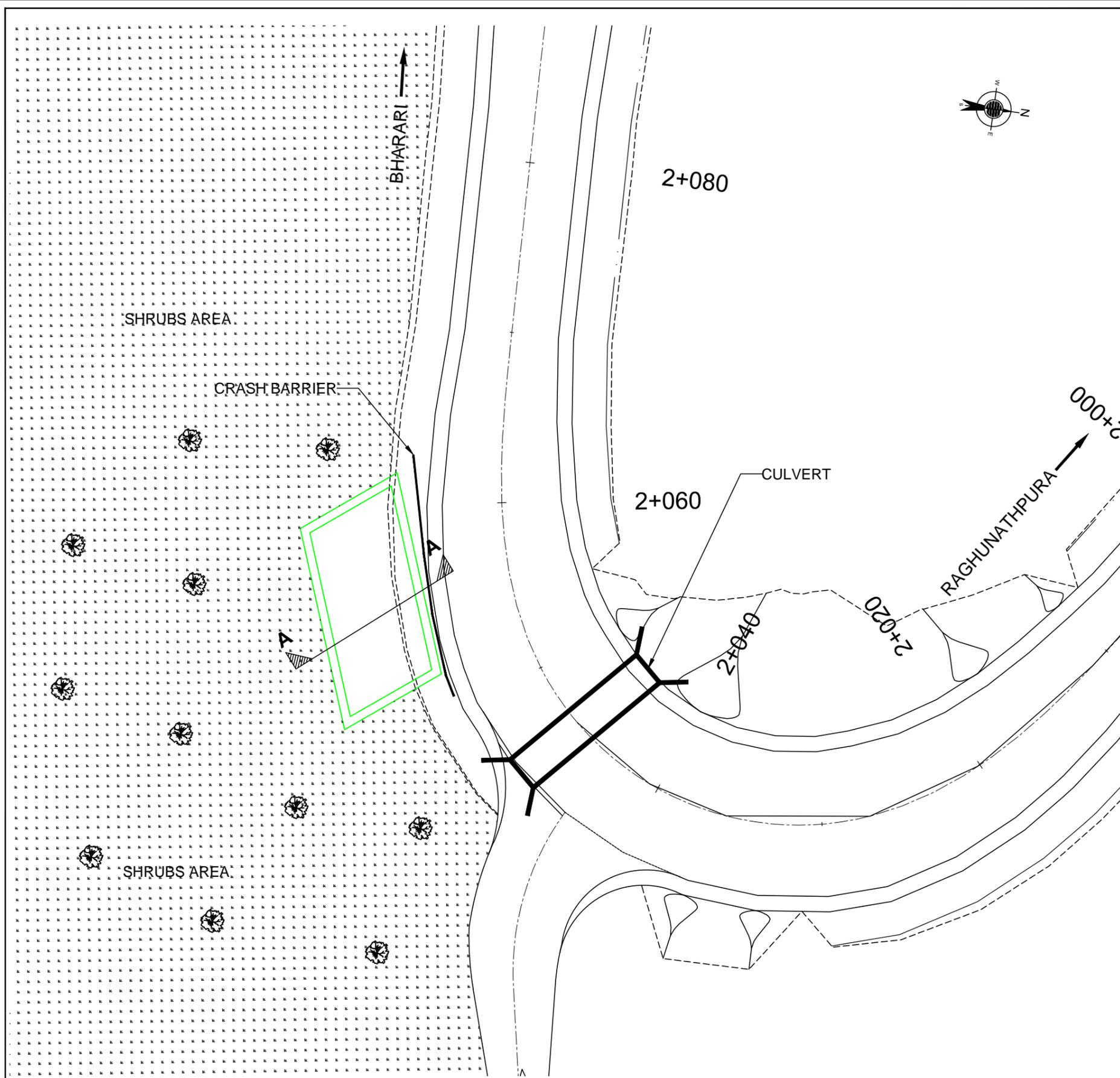
TITLE : DEBRIS DISPOSAL LOCATION LAYOUT PLAN

DRAWING NO : HP/RAH-BHA/DD-02

ROAD NAME : PACKAGE - IV
 UPGRADEMENT OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.

REV. 0
 SIZE : A3

SHEET 01 OF 01



TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
SCALE:
 NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : ENHANCEMENT OF DRINKING WATER STRUCTURE AT CH :2+060	REV.	0
DRAWN	DANIEL		SIZE :	A3
CHECKED	CHANDRA/ASHIK		DRAWING NO : HP/RAH-BHA/DW-01	
APPROVED	PRADEEP KAPLA		PACKAGE - IV	
ROAD NAME :		UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	SHEET 01 OF 02	

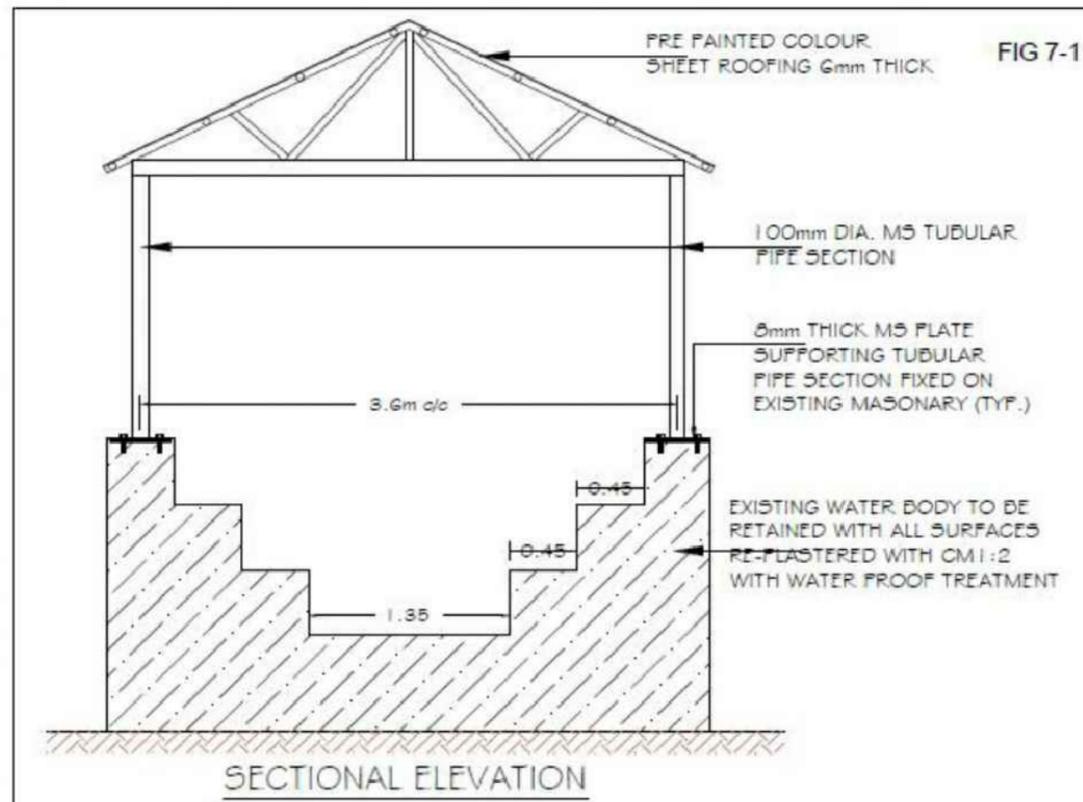
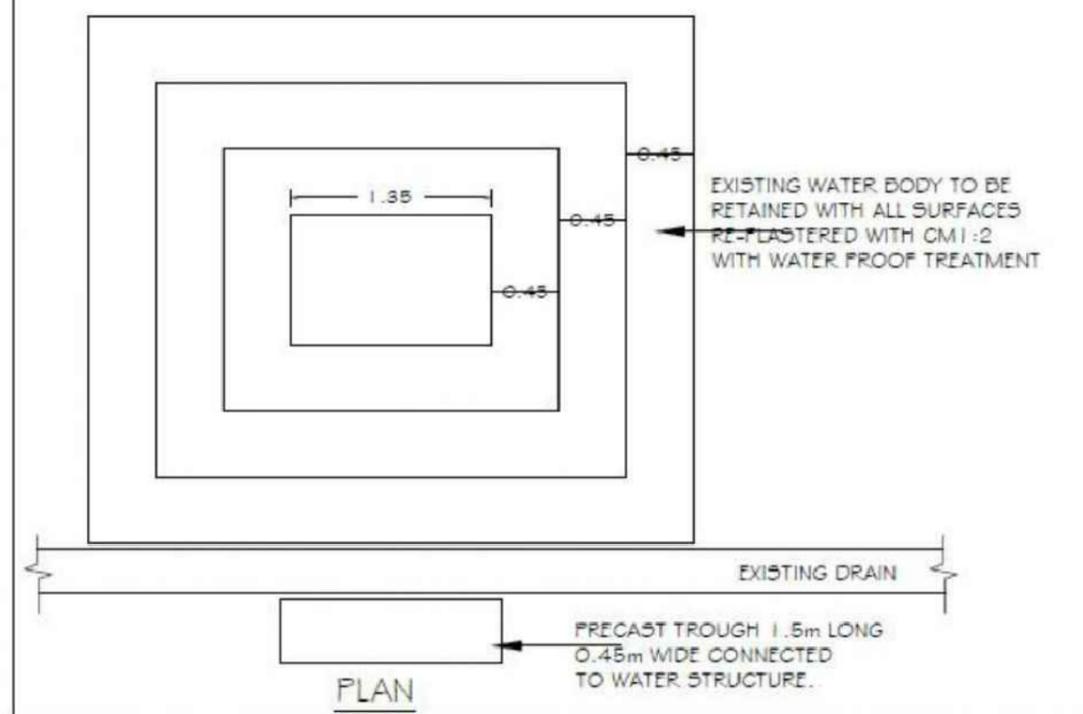
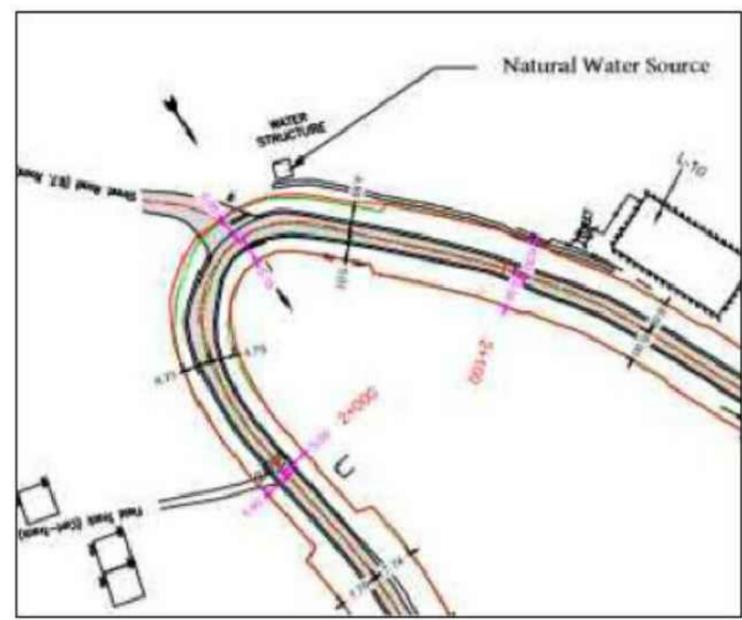


FIG 7-1 RENOVATION/CONSERVATION MEASURE OF NATURAL WATER SOURCE AT CH.2+050



Items for Renovation of Natural Water Source at Ch 2+050

1. Carryout minor repairs to the entire masonry work like filling up cracks and redoing broken edges and sides as required /per site condition
2. Plastering of all external surfaces of masonry structure in CM 1:4 with water proof treatment
3. Providing and Fixing of M.S roof with truss structure and covered with 6mm thick colour coated sheets as shown in drawings/site conditions
4. Placing of a 1.5-metre-long, 0.45 metre wide and 0.45 metre deep pre-cast concrete trough for drinking of water by stary animals and other grazing animals of nearby areas including making required inlet and out let connections to the trough
5. Providing two coats of exterior paint/white washing to the entire water body structure as per site conditions/site requirements
6. Removal and/or clearing of unwanted debris/wate material surrounding the water source and disposal of the same at an approved location
7. Replacement of old/damaged plumbing fixtures (pipe extensions and water taps) at water source to facilitate users of natural water source

Note: All renovation /conservation work at the natural water source shall be carried out in close consultation with local community leaders/regular users of water source. All suggestions shall be duly considered with prior approval of Engineer-in-Charge.

NOTE: The drawing given above is indicative, contractor to submit working drawing in consultation with local authorities,CSC, HPRIDC,for taking up the work. **TENDER PURPOSE ONLY**

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

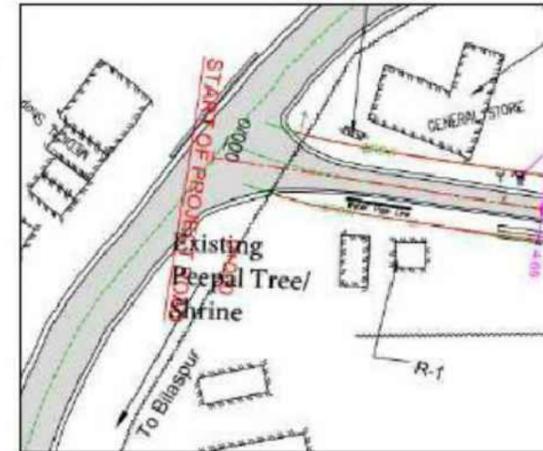
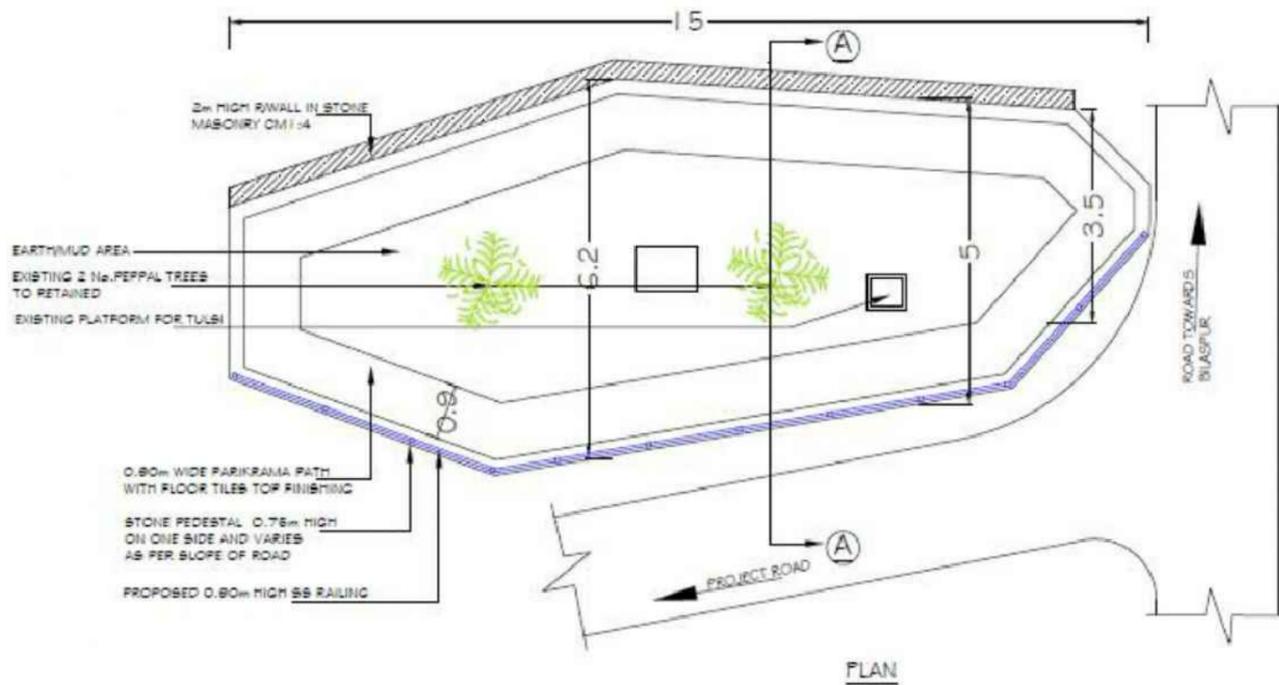
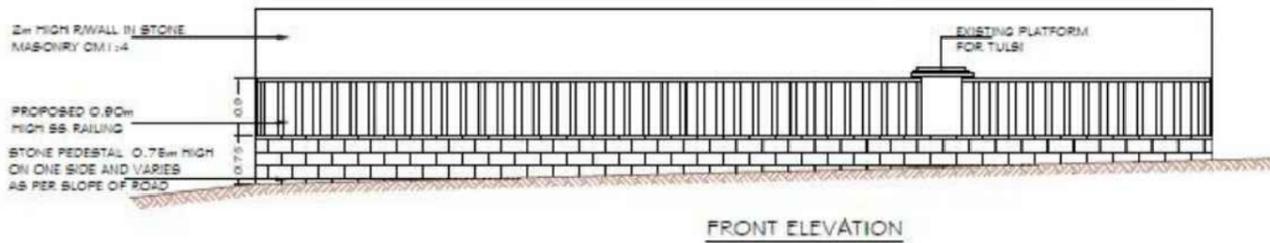
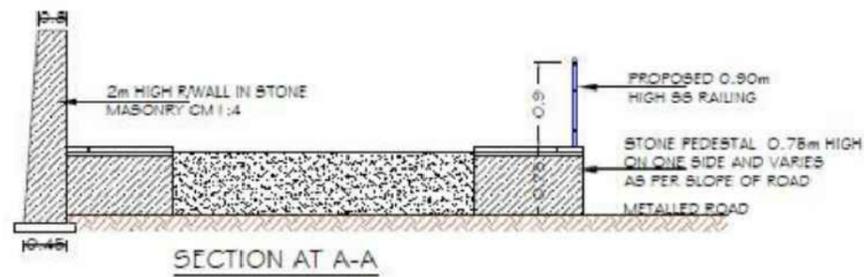
 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE:
 NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : ENHANCEMENT OF DRINKING WATER STRUCTURE AT CH :2+050 DRAWING NO : HP/RAH-BHA/DW-02	REV.	0	
DRAWN	DANIEL		SIZE :	A3	
CHECKED	CHANDRA/ASHIK		ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	PACKAGE - IV	SHEET 02 OF 02
APPROVED	PRADEEP KAPLA				

FIG 7-2 RENOVATION OF RELIGIOUS SHRINE (PEPPAL TREE WITH PLATFORM) AT CH.0+00



LOCATION PLAN



PRESENT SITE PHOTOGRAPH FRONT SIDE



PRESENT SITE PHOTOGRAPH FROM SIDE (NH)

Items for Renovation of Religious Shrine at Ch 0+000

1. Construction of random rubble masonry wall in CM 1:4 to retain earth at the back side of shrine. The dimension of structure shall be 5-metre-long, 2metre height, 300 mm thick at top and 450mm thick at bottom with suitable foundation and bed concrete. The length and height of the wall shall vary and match as per site conditions.
2. Laying of exterior non-slippery floor tiles on the shrine platform with atleast 75 mm thick sand bed for parikrama (900 mm wide and 30-metre-long) with tile edges are closed with CM 1:4
3. Providing and Fixing of SS railing all along the edge of the platform (900 mm height and 20 metre long)
4. Plastering of platform (all sides including front portion) in CM 1:4 -15 sq metres (20-metre-long and 0.75 metre average height)
5. Replacement of old/damaged plumbing fixtures (pipe extensions and water taps) at drinking water and ablation purposes, adjacent to platform
6. Providing two coats of exterior paint/white washing to the entire religious shrine including the adjacent water tank structure for ablation purposes as per site conditions/site requirements
7. Removal and/or clearing of unwanted debris/wate material surrounding the shrine and disposal of the same at an approved location

Note: All renovation /conservation work at the religious shrine shall be carried out in close consultation with local community leaders/regular users of water source. All suggestions shall be duly considered with prior approval of Engineer-in-Charge.

NOTE: The drawing given above is indicative, contractor to submit working drawing in consultation with local authorities,CSC, HPRIDC,for taking up the work. **TENDER PURPOSE ONLY**

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

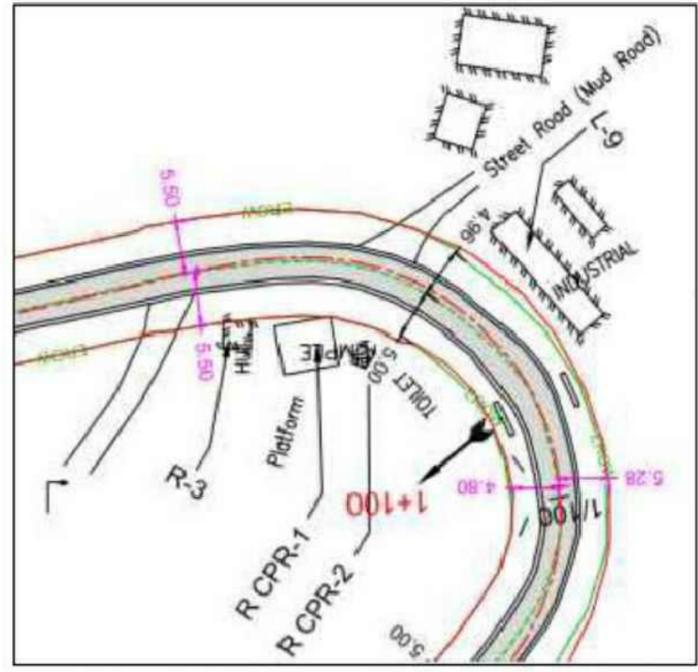
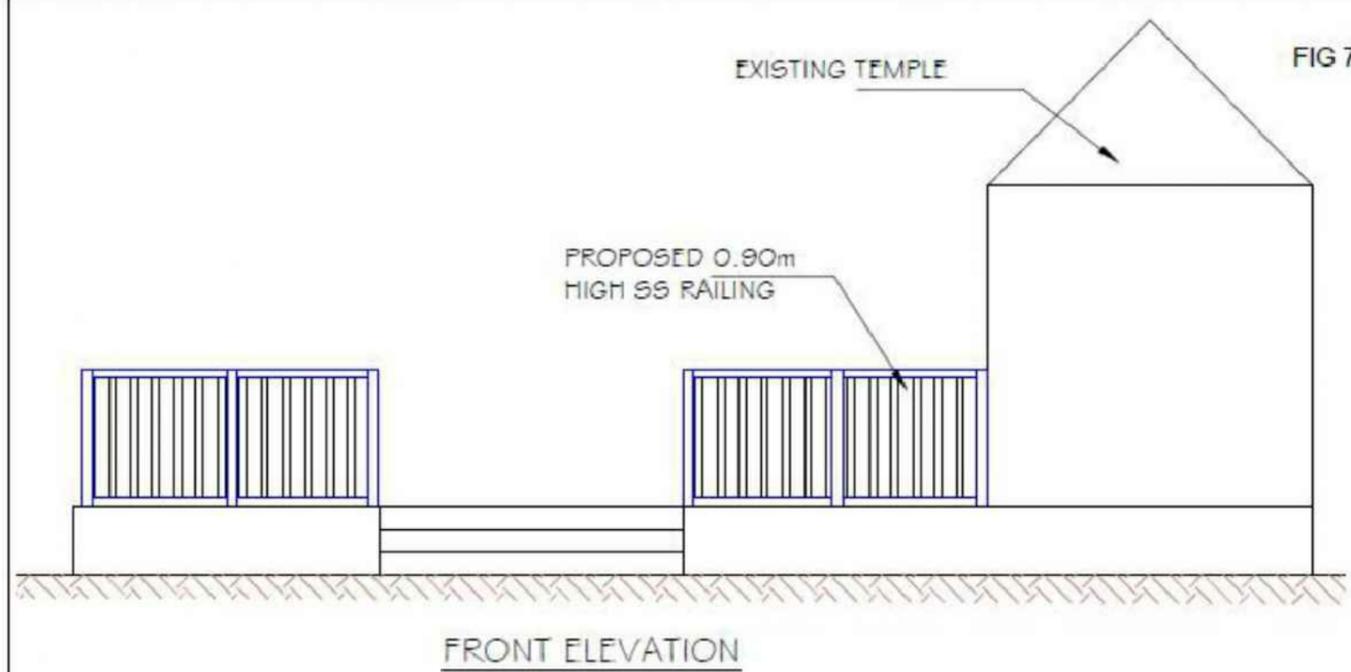
CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
SCALE:
 NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : RENOVATION OF RELIGIOUS SHRINE CH :0+000	REV.	0
DRAWN	DANIEL		SIZE :	A3
CHECKED	CHANDRA/ASHIK		DRAWING NO : HP/RAH-BHA/RS-01	
APPROVED	PRADEEP KAPLA		ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	
PACKAGE - IV		SHEET 01 OF 02		

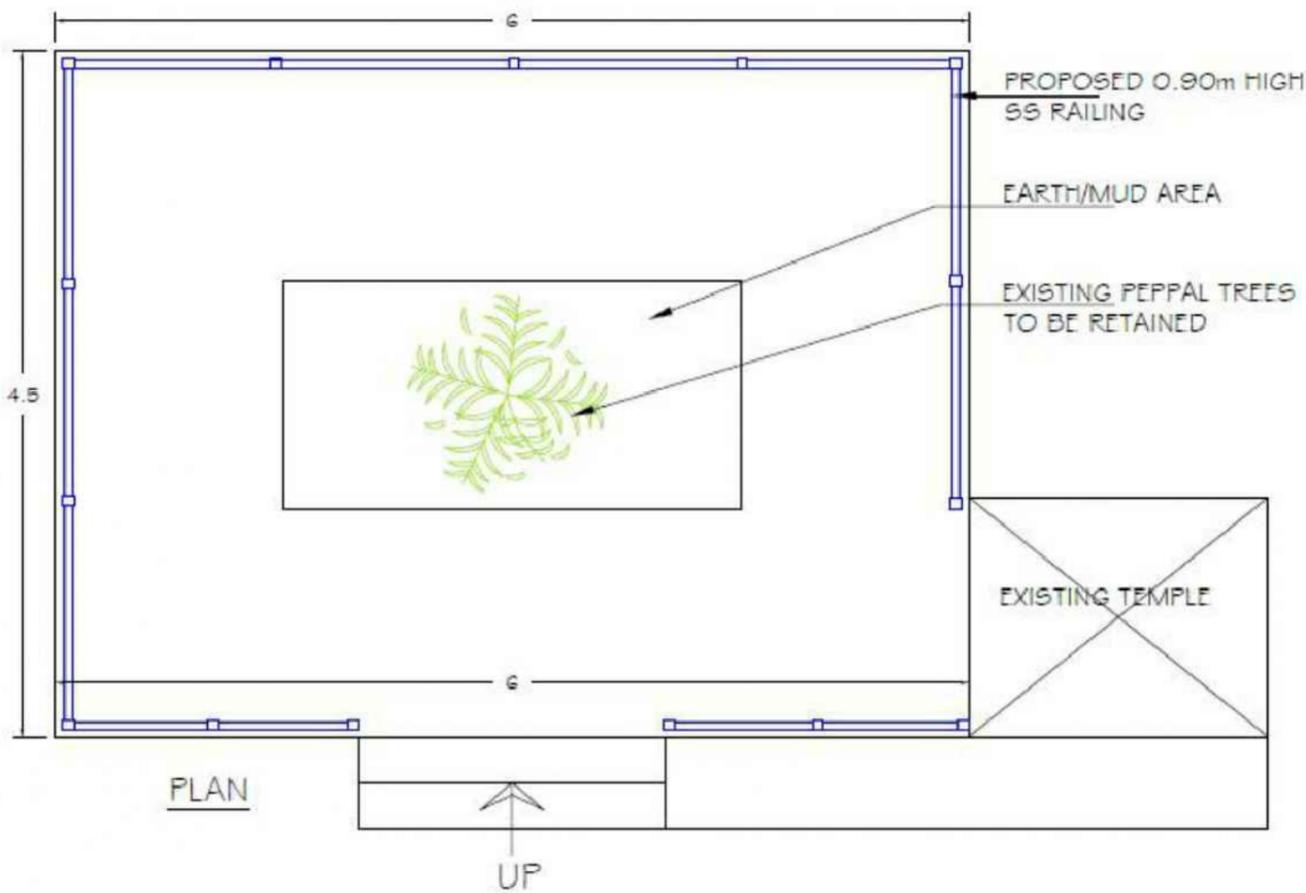
FIG 7-3 RENOATION OF RELIGIOUS SHRINE (PEPPAL TREE WITH PLATFORM) at Ch 1+052



Items for Renovation of Religious Shrine at Ch 1+052

1. Carryout minor repairs to the entire masonry work like filling up cracks and redoing broken edges and sides as required /per site condition
2. Providing and Fixing of SS railing all along the edge of the platform (900 mm height and 20 metre long)
3. Replacement of old/damaged plumbing fixtures (pipe extensions and water taps) at drinking water and abluion purposes, adjacent to platform
4. Providing two coats of exterior paint/white washing to the entire religious shrine including the adjacent water tank structure for abluion purposes as per site conditions/site requirements
5. Removal and/or clearing of unwanted debris/wate material surrounding the shrine and disposal of the same at an approved location

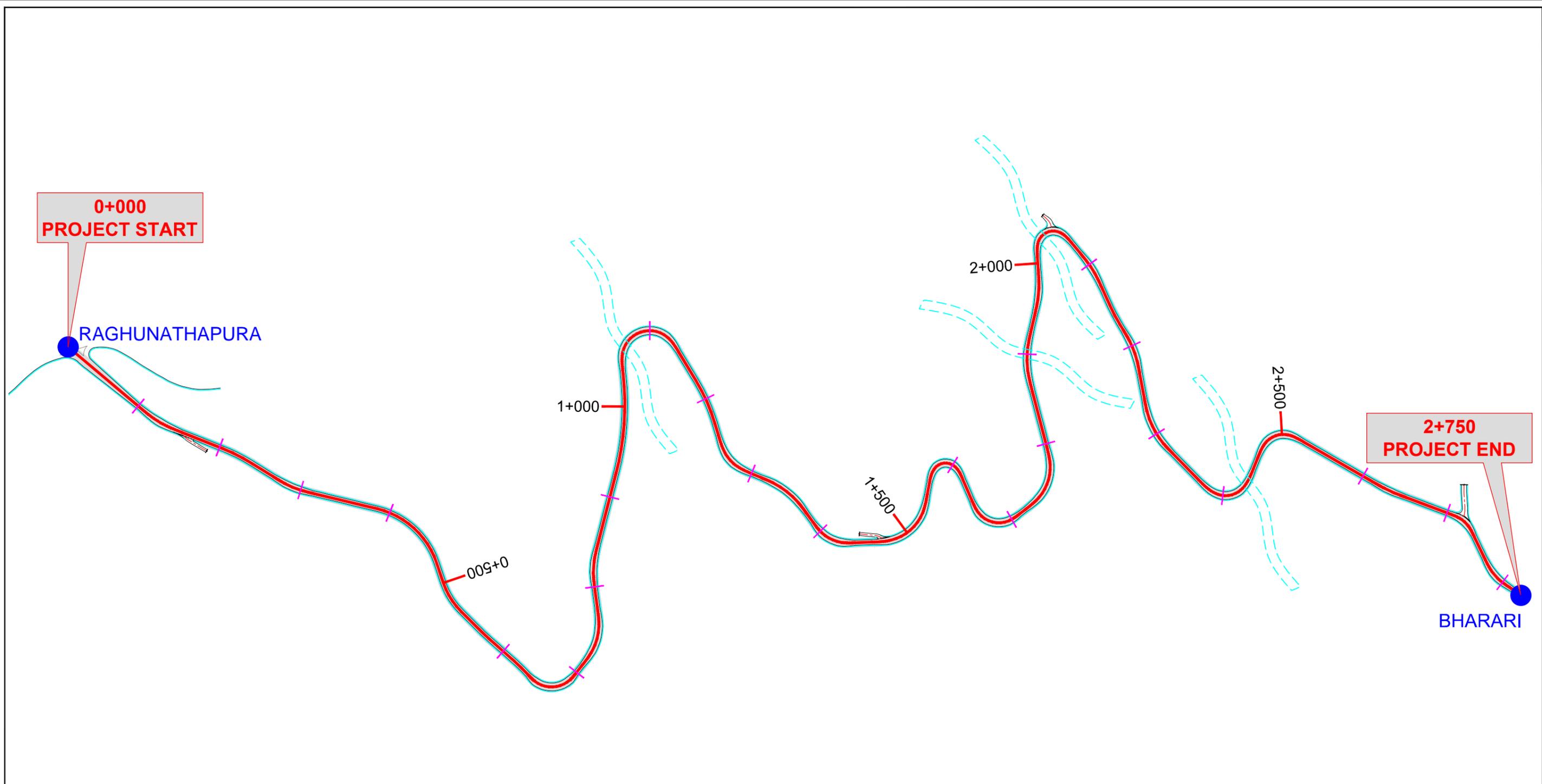
Note: All renovation /conservation work at the religious shrine shall be carried out in close consultation with local community leaders/regular users of water source. All suggestions shall be duly considered with prior approval of Engineer-in-Charge.



NOTE: The drawing given above is indicative, contractor to submit working drawing in consultation with local authorities, CSC, HPRIDC, for taking up the work

TENDER PURPOSE ONLY

<p>CLIENT:</p> <p>HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>					<p>CONSULTANT:</p> <p>SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in</p>					<p>PROJECT:</p> <p>HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p>					<p>DESIGNED: MADHUBABU</p> <p>DRAWN: DANIEL</p> <p>CHECKED: CHANDRA/ASHIK</p> <p>APPROVED: PRADEEP KAPLA</p>		<p>TITLE:</p> <p>RENOVATION OF RELIGIOUS SHRINE CH :1+052</p>		<p>REV. 0</p> <p>SIZE: A3</p>	
<p>SCALE:</p> <p>NOT TO SCALE</p>					<p>ROAD NAME:</p> <p>UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>					<p>PACKAGE - IV</p>		<p>DRAWING NO : HP/RAH-BHA/RS-04</p>		<p>SHEET 02 OF 02</p>						



**0+000
PROJECT START**

RAGHUNATHAPURA

1+000

2+000

1+500

2+500

**2+750
PROJECT END**

BHARARI

LEGEND:-

	SEASONAL STREAMS
--	------------------

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

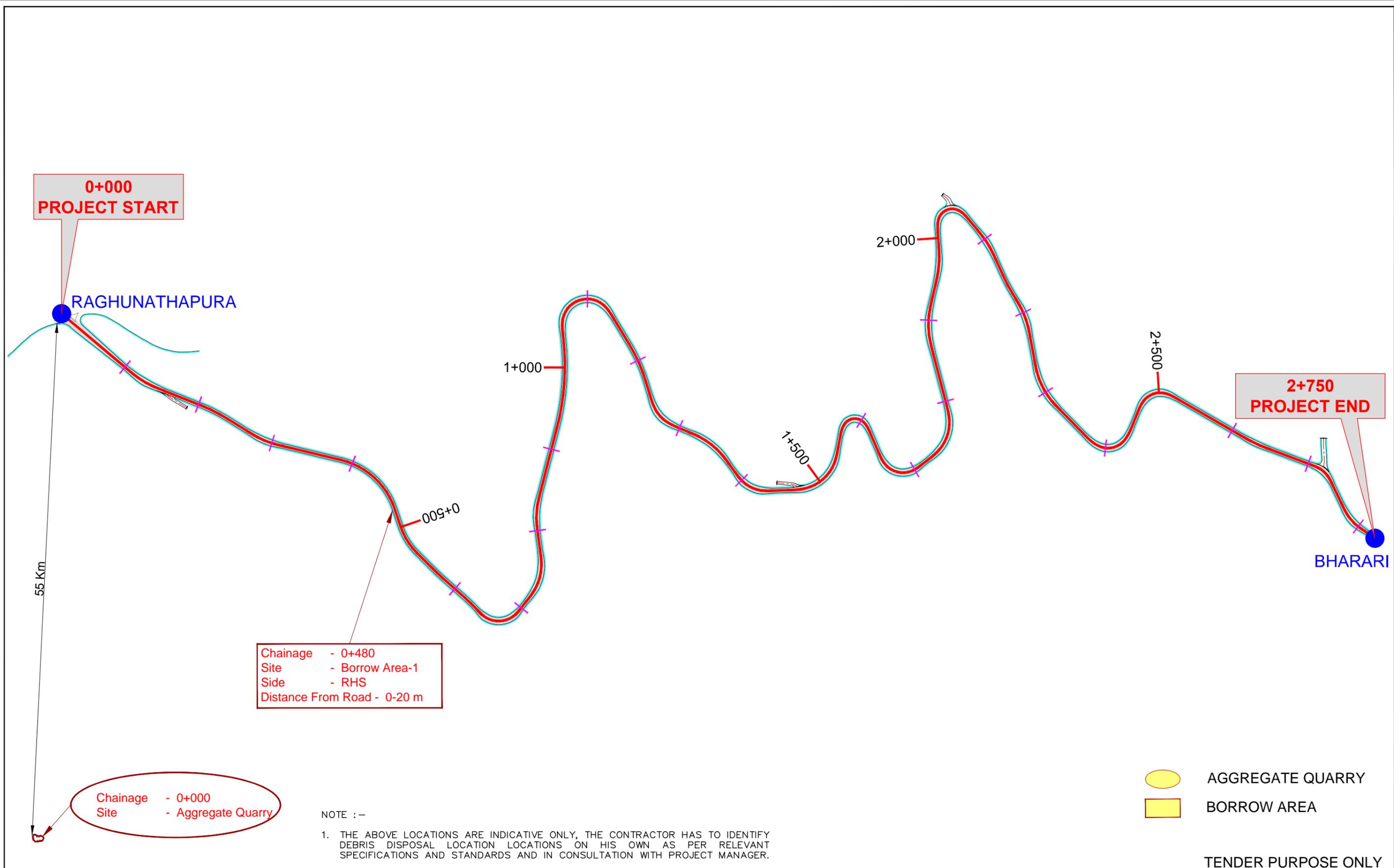
HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

SATRA SERVICES AND SOLUTIONS PVT LTD.
#1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
SCALE:
NOT TO SCALE

DESIGNED	MADHUBABU	TITLE :	REV.	0
DRAWN	DANIEL		SEASONAL STREAMS LOCATION PLAN	SIZE :
CHECKED	CHANDRA/ASHIK	DRAWING NO : HP/RAH-BHA/SS-01		
APPROVED	PRADEEP KAPLA			
ROAD NAME :		PACKAGE - IV	SHEET 01 OF 01	
UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.				



AGGREGATE QUARRY
 BORROW AREA

NOTE :-
 1. THE ABOVE LOCATIONS ARE INDICATIVE ONLY, THE CONTRACTOR HAS TO IDENTIFY DEBRIS DISPOSAL LOCATION LOCATIONS ON HIS OWN AS PER RELEVANT SPECIFICATIONS AND STANDARDS AND IN CONSULTATION WITH PROJECT MANAGER.

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

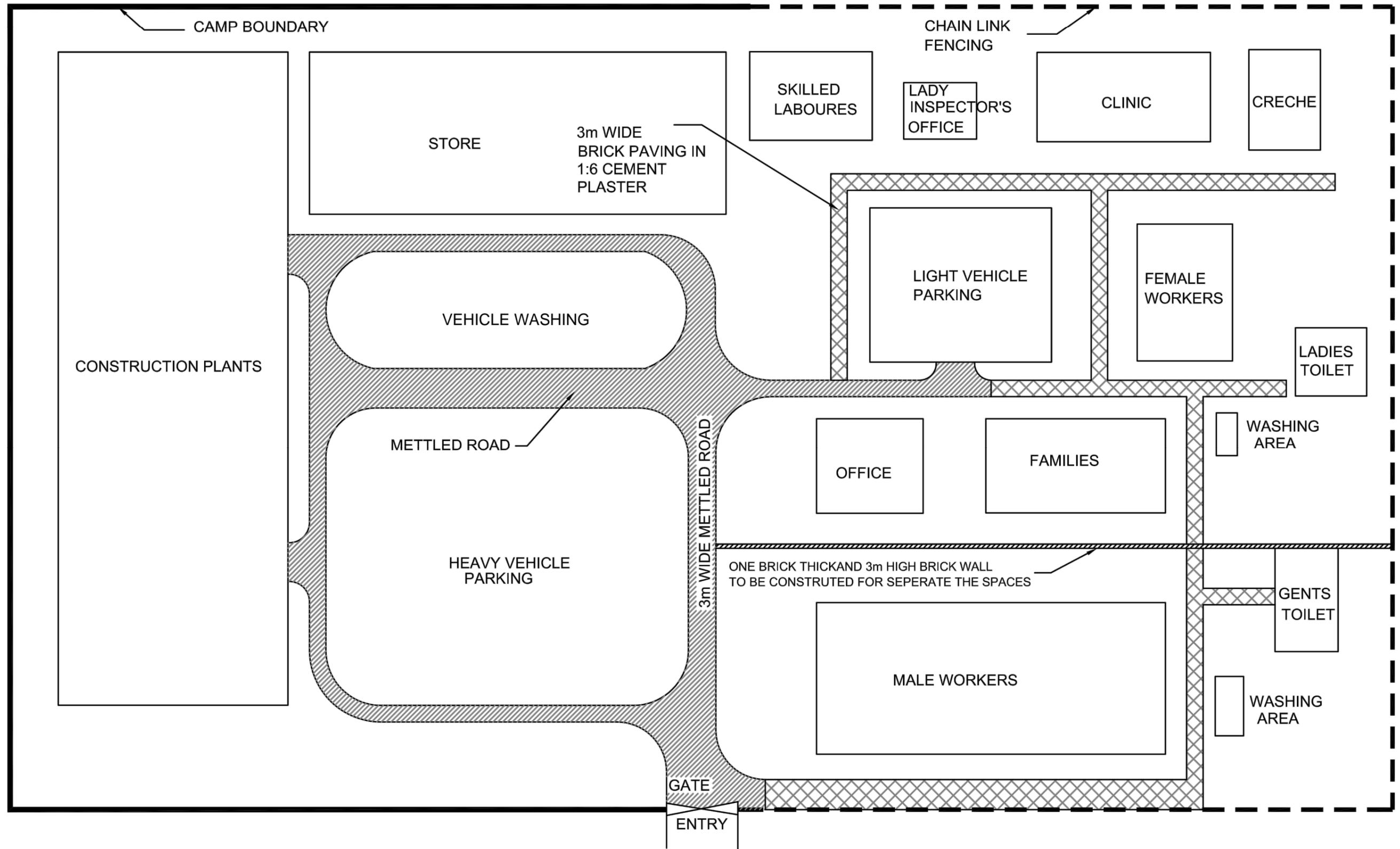
CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE:
 NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : SUGGESTED QUARRY AND BORROW AREA LOCATIONS	REV.	0
DRAWN	DANIEL		SIZE :	A3
CHECKED	CHANDRA/ASHIK	DRAWING NO : HP/RAH-BHA/QB-01		
APPROVED	PRADEEP KAPLA			
ROAD NAME :		PACKAGE - IV		
UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.		SHEET 01 OF 01		



TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

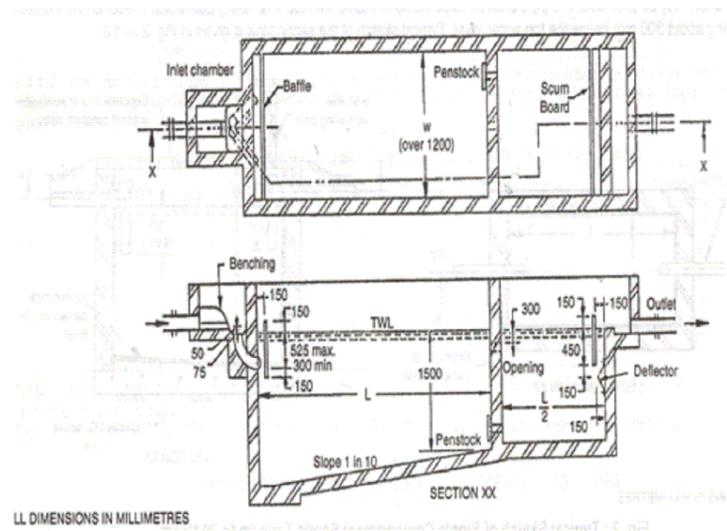
CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
 SCALE: NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : TYPICAL LAYOUT OF CONSTRUCTION CAMP DRAWING NO : HP/RAH-BHA/TCC-01 PACKAGE - IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	REV. 0
DRAWN	DANIEL		SIZE : A3
CHECKED	CHANDRA/ASHIK		
APPROVED	PRADEEP KAPLA		
ROAD NAME :			SHEET 01 OF 01

SEPTIC TANK AND OIL INTERCEPTOR



ALL DIMENSIONS IN MILLIMETRES

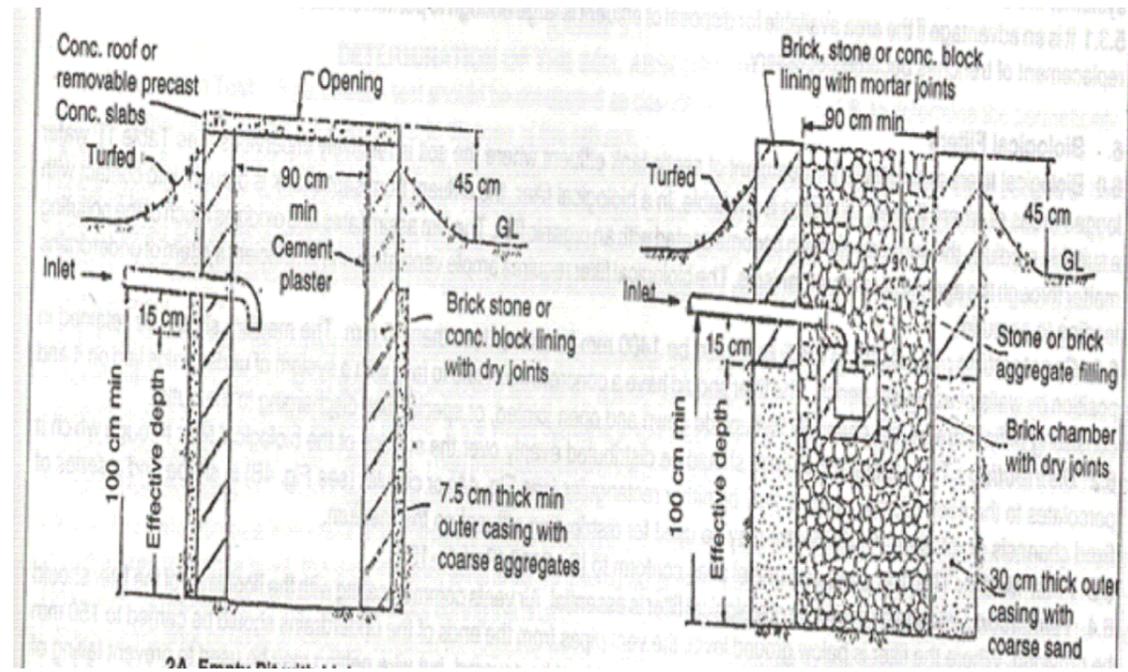
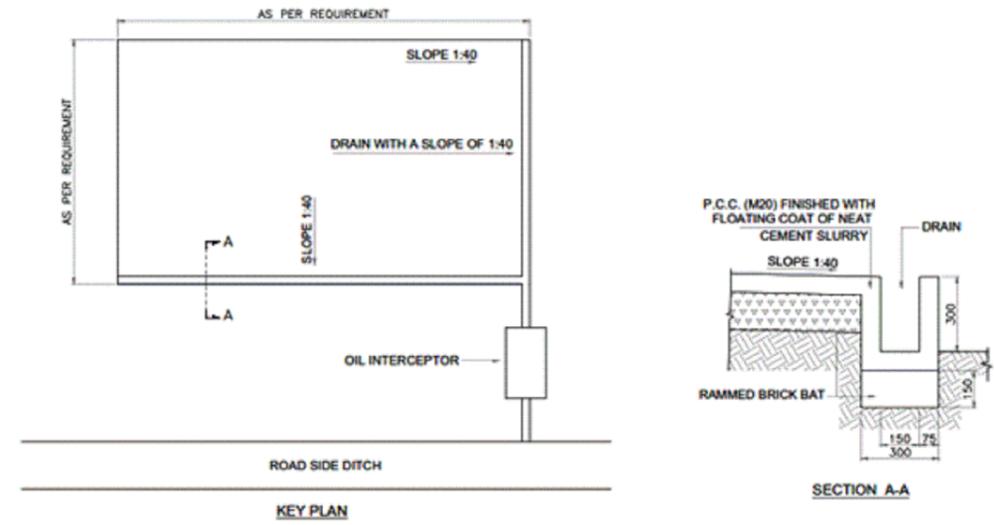
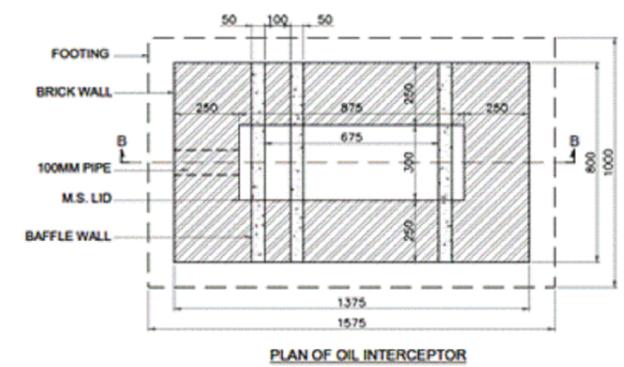
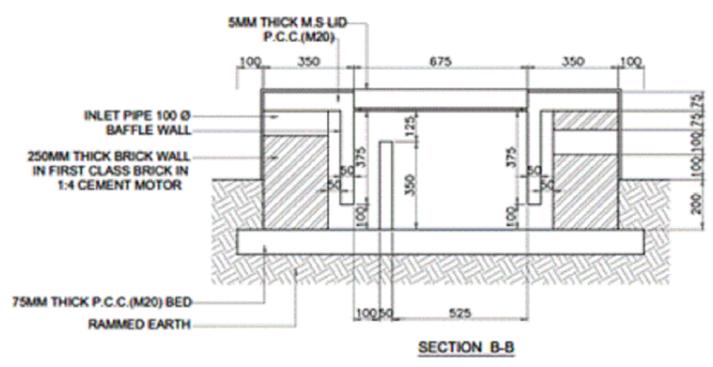


FIGURE. SEPTIC TANK SPECIFICATIONS



PLAN OF OIL INTERCEPTOR



SECTION B-B

FIGURE. OIL INTERCEPTOR

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

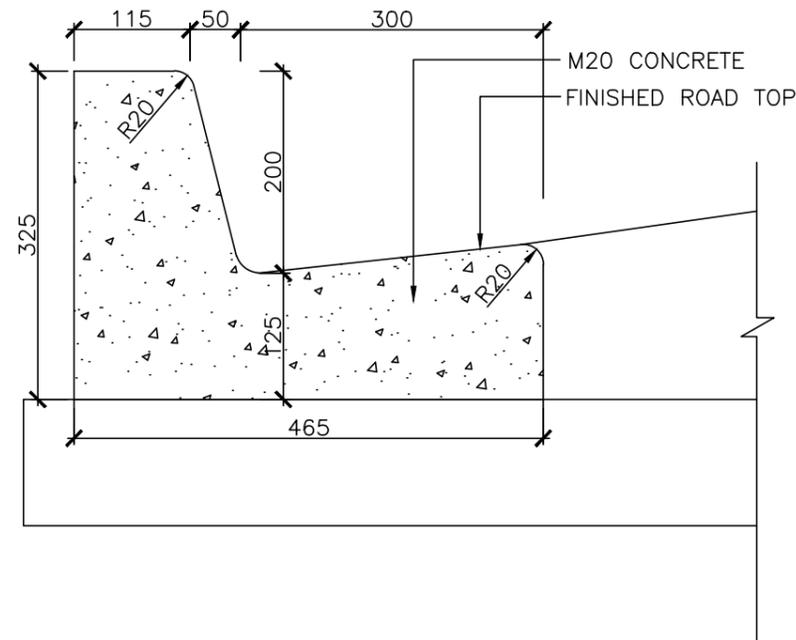
CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

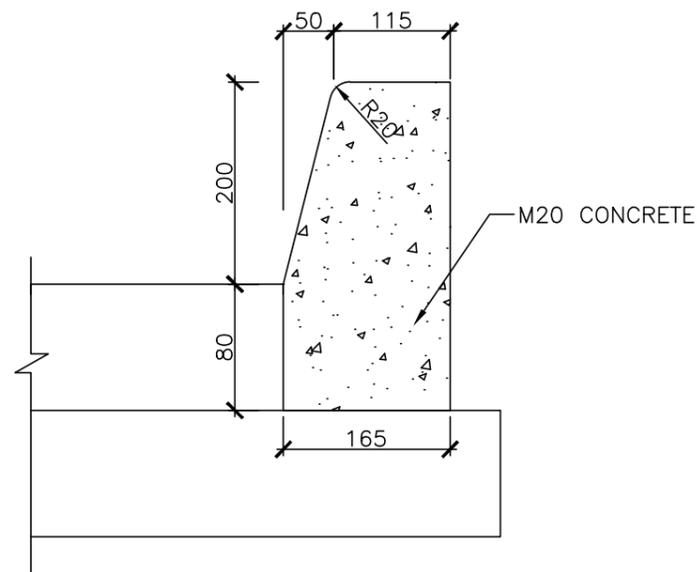
PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
 SCALE: NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : TYPICAL DETAILS OF SEPTIC TANK & OIL INTERCEPTOR	REV.	0
DRAWN	DANIEL		SIZE :	A3
CHECKED	CHANDRA/ASHIK		DRAWING NO : HP/RAH-BHA/ST-01	
APPROVED	PRADEEP KAPLA		ROAD NAME : PACKAGE - IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	
			SHEET	01 OF 01

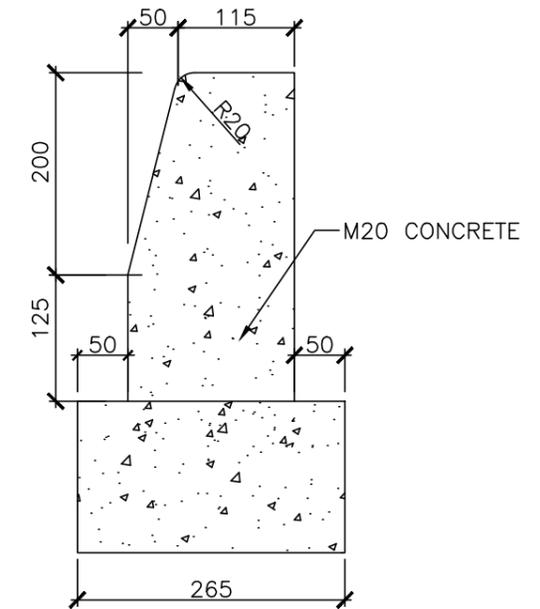
HIGHWAY STANDARD DETAILS DRAWINGS



DETAILS OF KERB WITH CHANNEL



DETAILS OF KERB



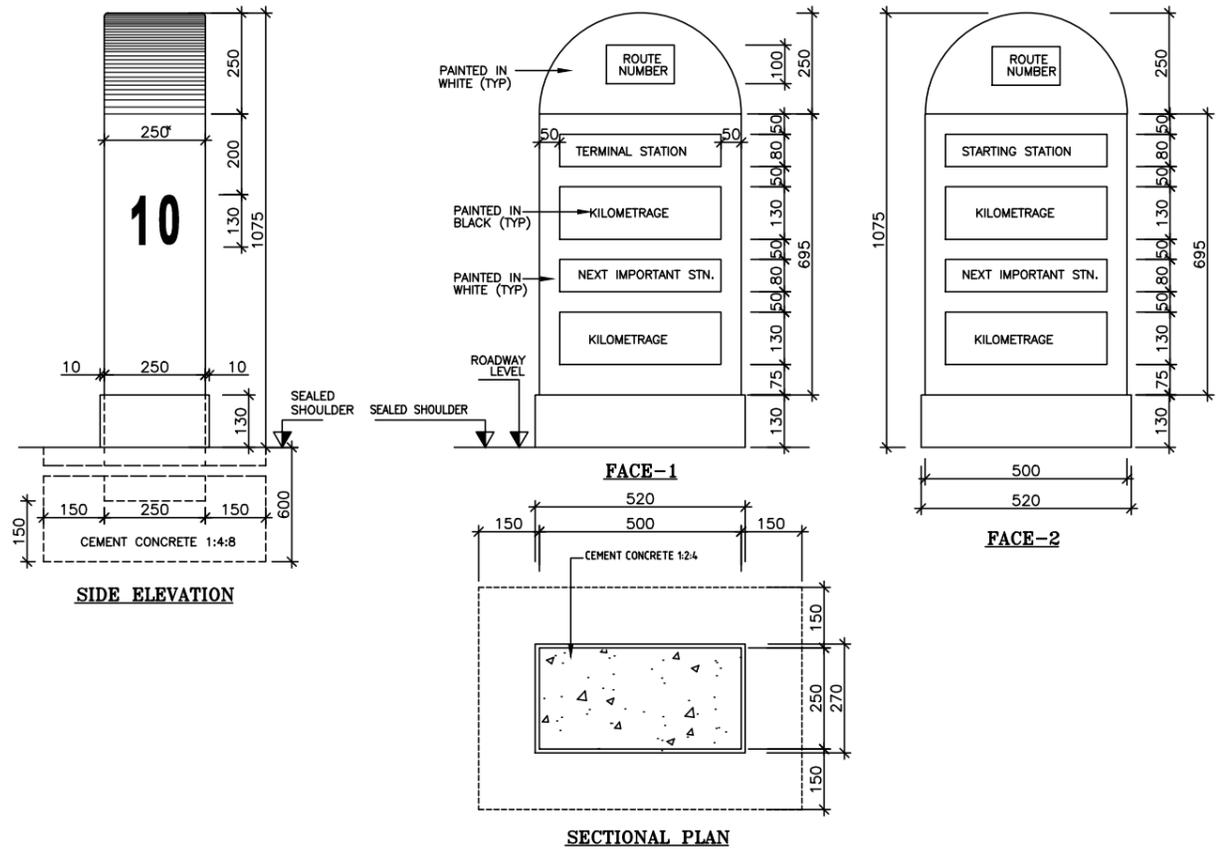
DETAILS OF KERB

NOTES:-

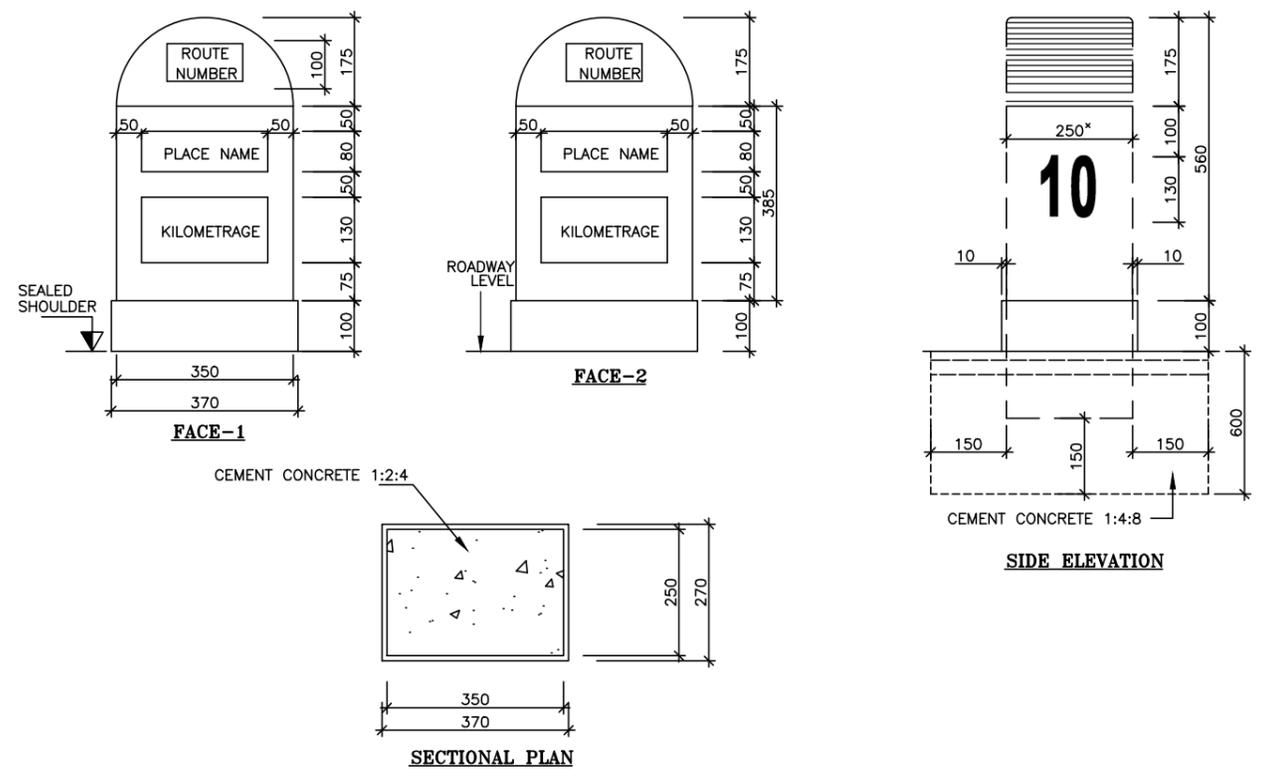
1. GRADE OF CONCRETE IS M20.

TENDER PURPOSE ONLY

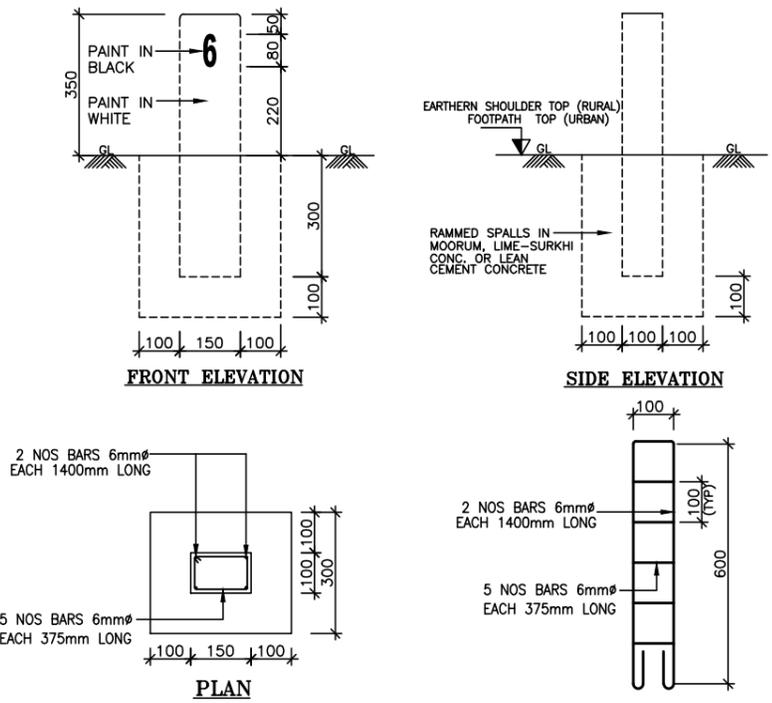
						CLIENT:  HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT:  SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA	TITLE : TYPICAL DETAILS OF KERB DRAWING NO : HP/RAH-BHA/MISC/001	REV. 0 SIZE : A3												
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> </tbody> </table>						REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED								ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.		PACKAGE-IV SHEET 01 OF 01	
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																	
SCALE: NOT TO SCALE																							



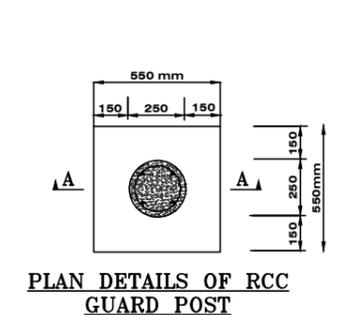
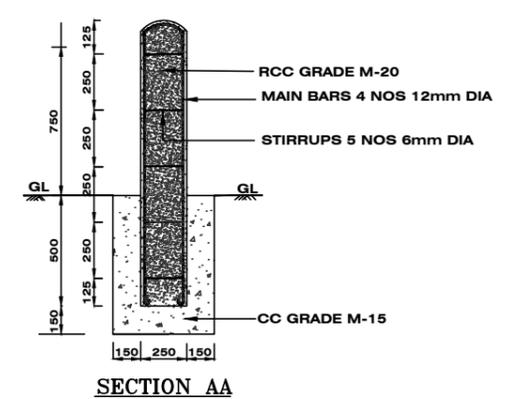
TYPE DESIGNS FOR 5TH KILOMETRE STONE ON MAJOR DISTRICT ROAD



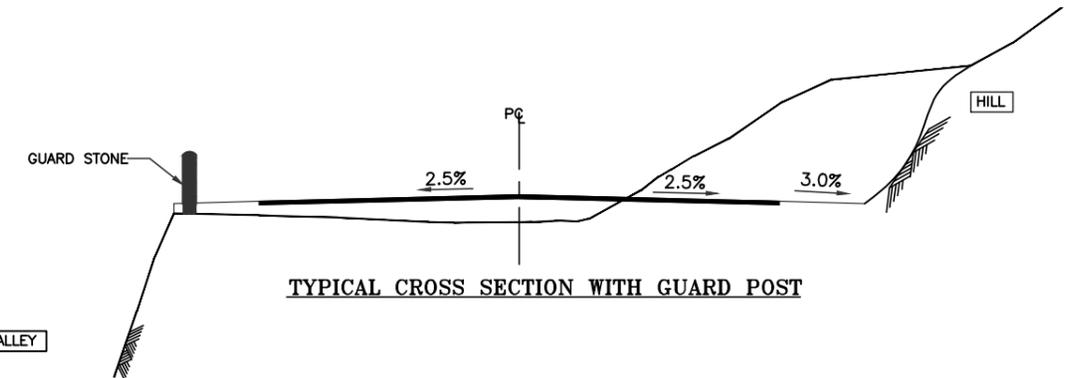
TYPE DESIGNS FOR ORDINARY KILOMETRE STONES ON MAJOR DISTRICT ROAD



TYPICAL DESIGN FOR 200m. HECTOMETER STONES (APPLICABLE FOR RURAL AREAS)



RED REFLECTOR FIXED ON GUARD POST AT SUITABLE LOCATION

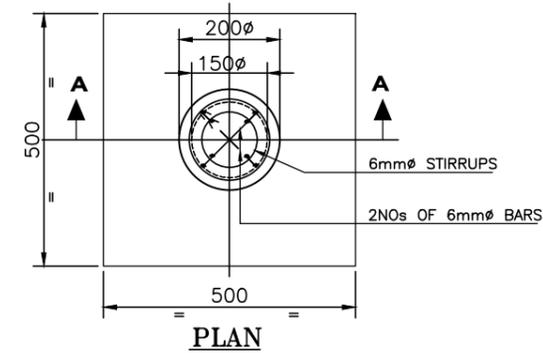
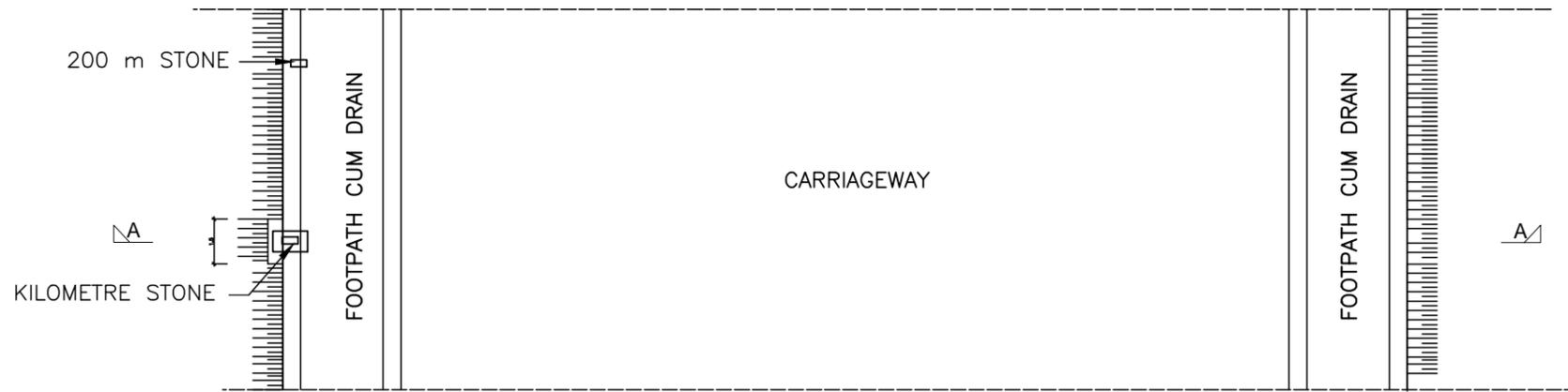
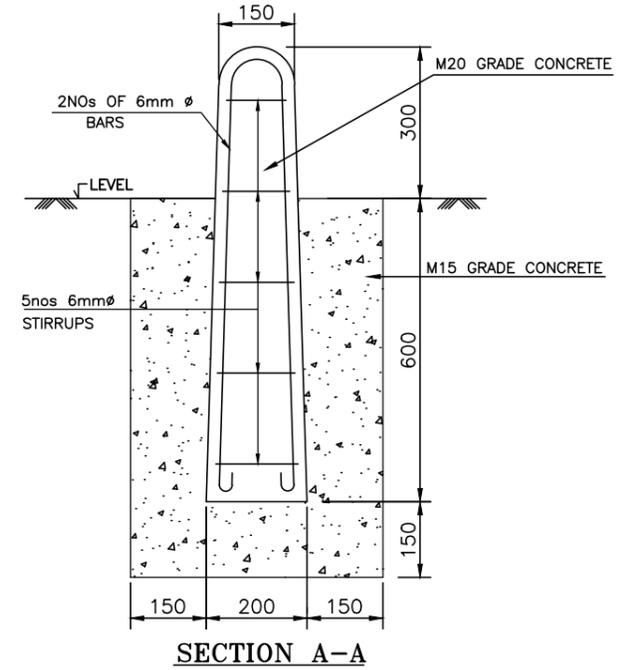
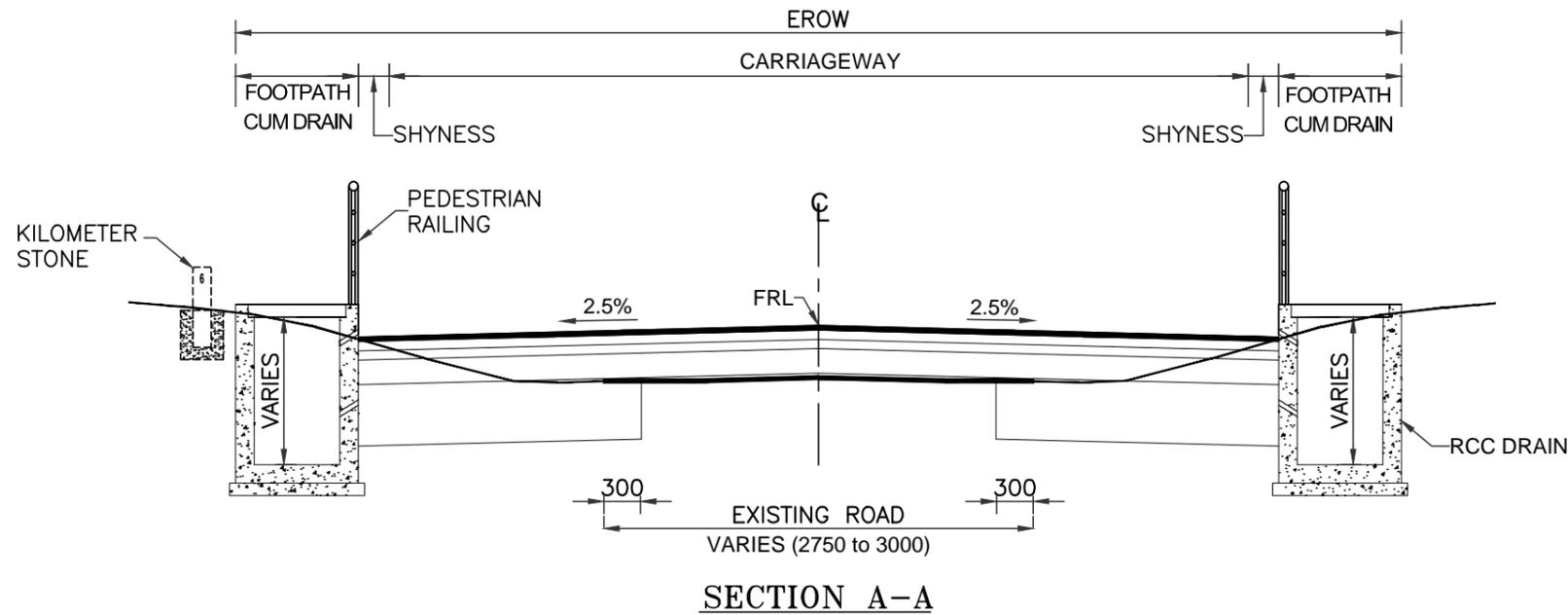


TYPICAL CROSS SECTION WITH GUARD POST

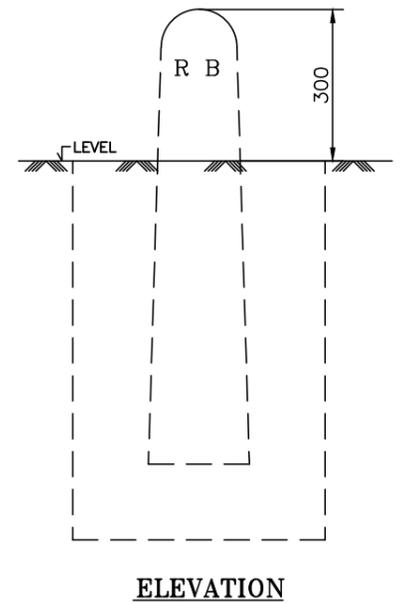
- NOTES:-**
1. BACKGROUND COLOUR SHALL BE WHITE WITH BLACK LETTERS & NUMERALS FOR NUMBERS OF STATIONS & DISTANCES.
 2. STANDARDS FOR LETTER & NUMBER SIZES FOR ALL KM SHALL BE AS PER IRC: 8-1980
 3. SIZE OF NUMBERS FOR 200M STONES SHALL BE AS PER IRC: 26-1967
 4. DETAILS OF BOUNDARY STONES SHALL BE AS PER IRC: 25-1967
 5. THE STONES SHALL BE PROVIDED ON LEFT SIDE OF ROAD AS SHOWN INDEPENDENTLY FOR EACH DIRECTION OF TRAFFIC FLOW.
 6. FOR DETAILS REFER IRC:8-1980 & IRC:26-1967

TENDER PURPOSE ONLY

					CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA	TITLE : TYPICAL DETAILS OF KILOMETRE, GUARD POST & BOUNDRY STONES DRAWING NO : HP/RAH-BHA/MISC/02A	REV. 0 SIZE : A3												
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> </tbody> </table>					REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED								ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.		PACKAGE-IV SHEET 01 OF 02	
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																



**TYPICAL BOUNDARY STONE
DESIGN WITH R.C.C AS MATERIAL**



**LOCATION OF KILOMETRE, 5th KM & 200 METRE STONE
(INTERMEDIATE LANE SECTIONS)**

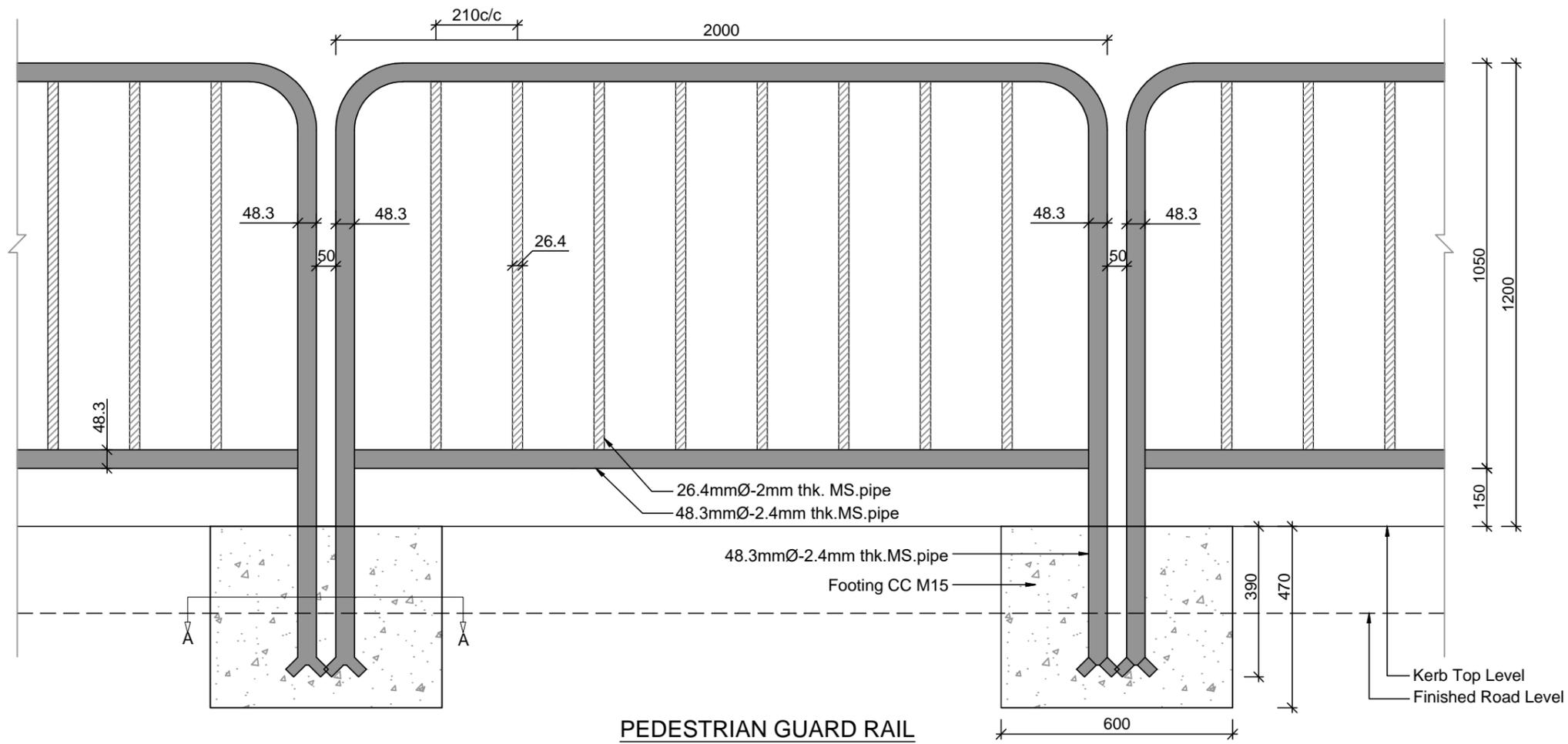
NOTE:

1. LOCATION OF THE KILOMETRE STONE / BOUNDARY STONES ARE INDICATIVE.THE SAME SIZE SHALL BE FINALIZED BY THE CONTRACTOR IN CONSULTATION WITH CSC / HPRIDC AS PER SITE CONDITIONS.

BAR BENDING SCHEDULE					
SL NO.	TYPE OF M.S.BAR	NO. OF BARS	SHAPE OF BARS	DIA IN mm	LENGTH OF MS BAR INCLUDING HOOKS
1	MAIN BARS	2		6	1.84m
2	TOPMOST STIRRUP	1		6	370mm
3	STIRRUP(FIRST FROM TOP)	1		6	405mm
4	STIRRUP(SECOND FROM TOP)	1		6	440mm
5	STIRRUP(THIRD FROM TOP)	1		6	475mm
6	BOTTOM MOST STIRRUP	1		6	810mm

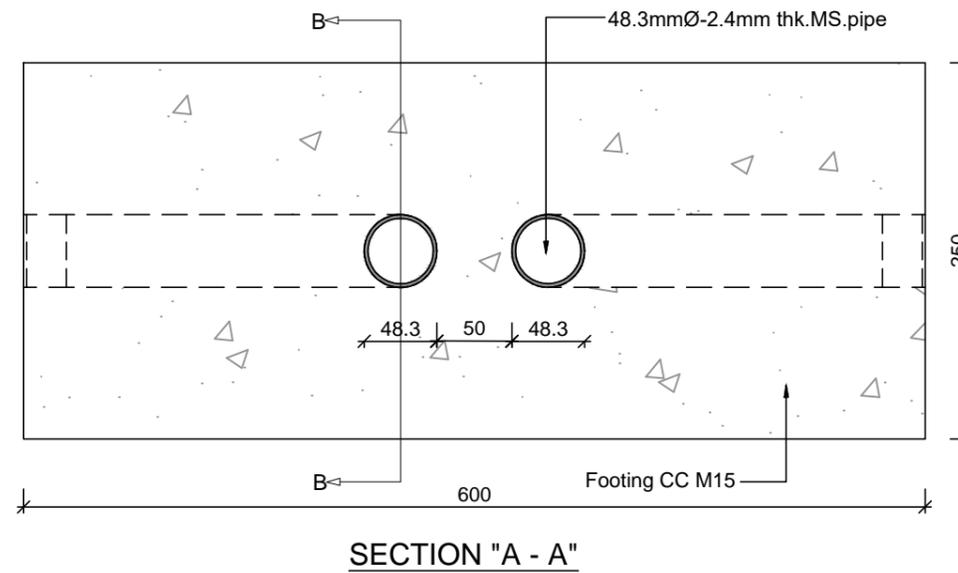
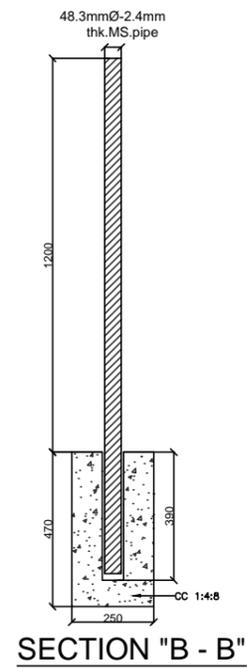
TENDER PURPOSE ONLY

<p>CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>					<p>CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in</p>					<p>PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p>					<p>DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA</p>					<p>TITLE: TYPICAL DETAILS OF KILOMETRE & BOUNDRY STONES DRAWING NO: HP/RAH-BHA/MISC/02B</p>					<p>REV. 0 SIZE: A3</p>				
<p>SCALE: NOT TO SCALE</p>					<p>ROAD NAME: PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>					<p>SHEET 02 OF 02</p>																			
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																							



Notes:

1. All the dimensions are in millimeter unless otherwise specified.
2. Footing shall be in plain cement concrete of M15 grade.
3. Structural steel shall conform to IS:22-2008.
4. Post ends in concrete footing shall be bended to serve the purposed of hold fast.
5. The Location of the pedestrian guardrail shown are tentative. the same shall be finalized by the contractor in consultation with CSC/HPRIDC as per site conditions.
6. Painting two coats with synthetic enamel painting shall be done over red oxide primer.



TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:



HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:



SATRA SERVICES AND SOLUTIONS PVT LTD.
#1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana – 500003, India.
Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:

HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE:

NOT TO SCALE

DESIGNED	MADHUBABU
DRAWN	DANIEL
CHECKED	CHANDRA/ASHIK
APPROVED	PRADEEP KAPLA

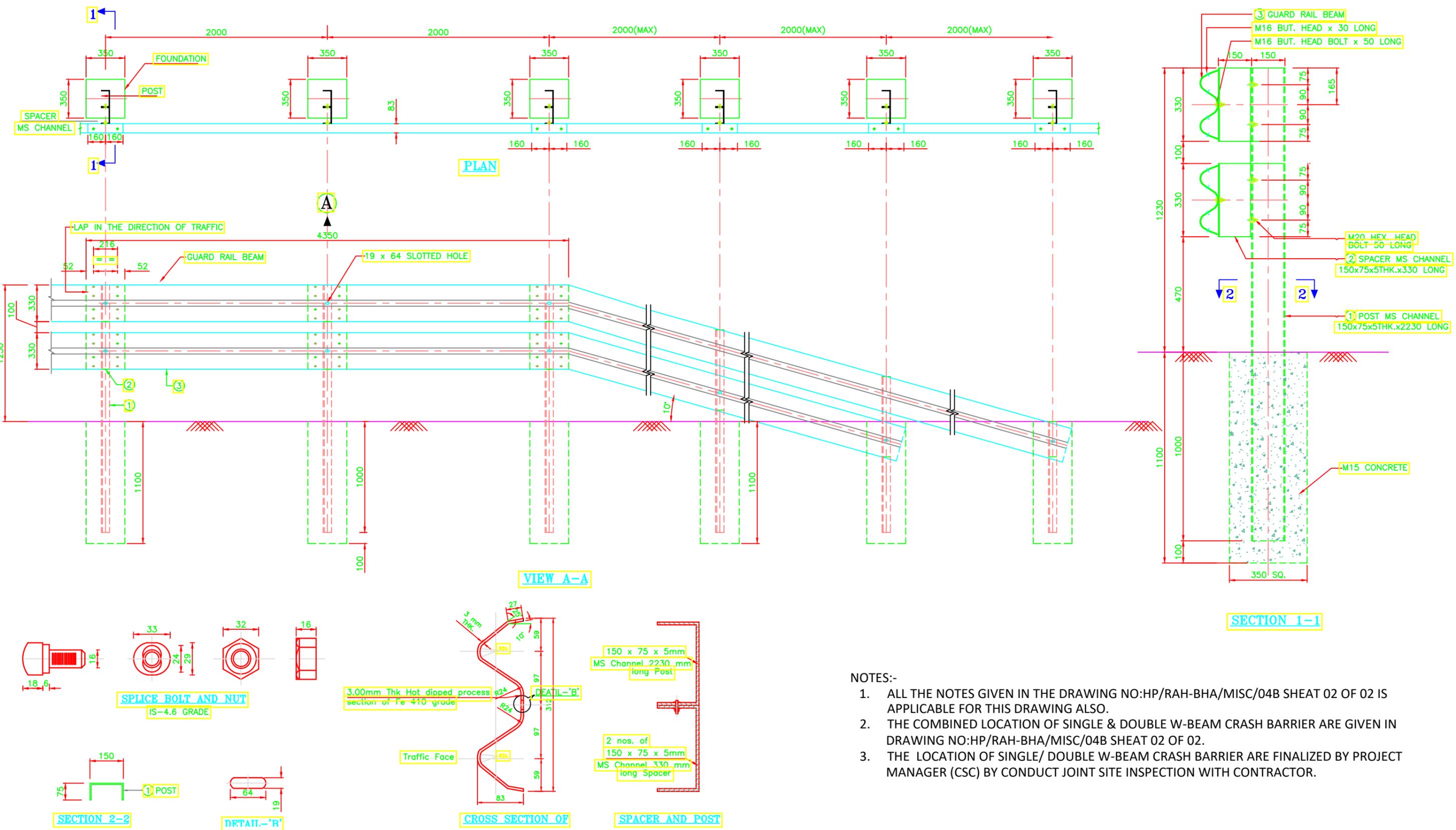
TITLE : TYPICAL DETAILS OF PEDESTRIAN GUARDRAIL

REV.	0
SIZE :	A3

DRAWING NO : HP/RAH-BHA/MISC/003

ROAD NAME : PACKAGE-IV
UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.

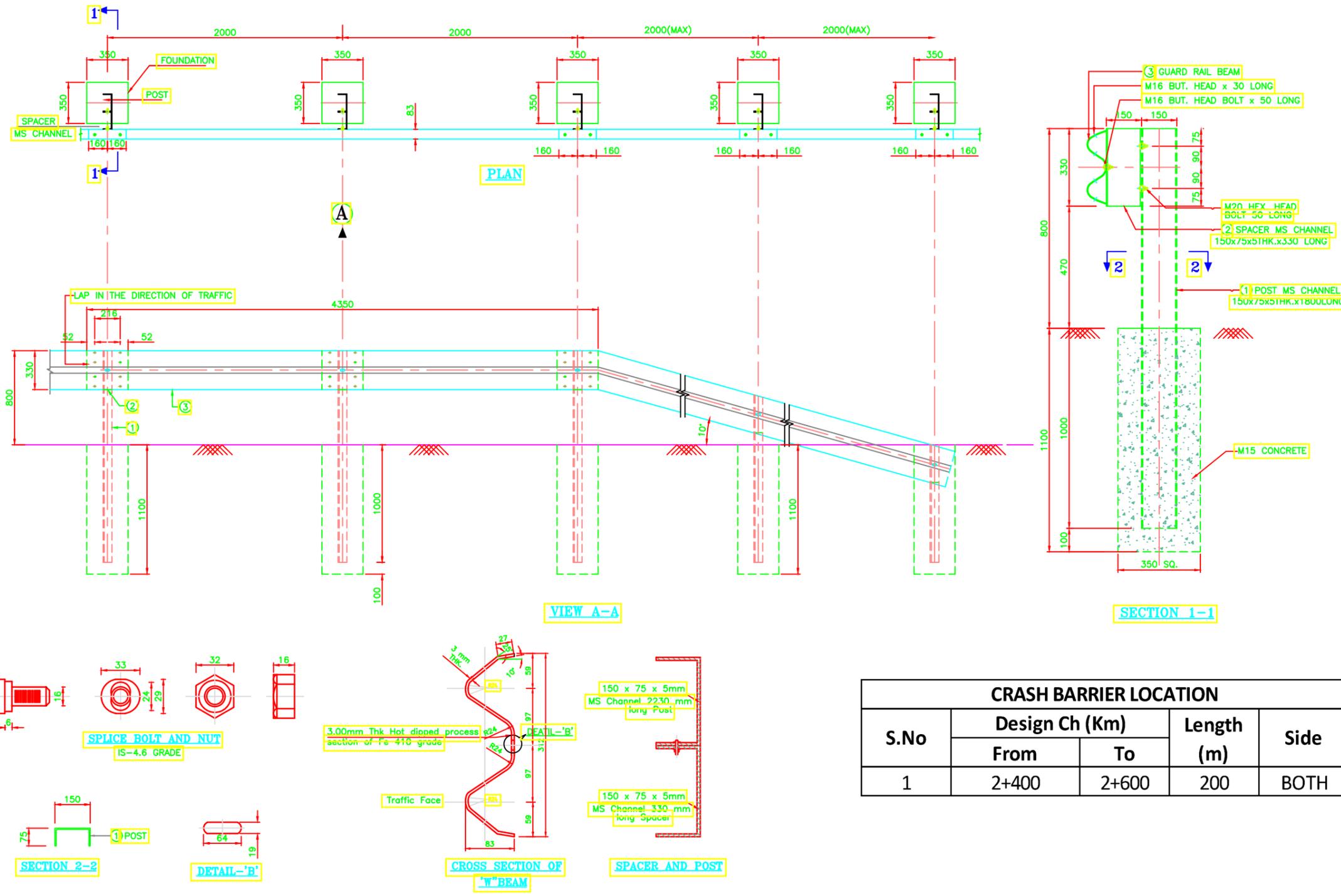
SHEET 01 OF 01



- NOTES:-**
- ALL THE NOTES GIVEN IN THE DRAWING NO:HP/RAH-BHA/MISC/04B SHEAT 02 OF 02 IS APPLICABLE FOR THIS DRAWING ALSO.
 - THE COMBINED LOCATION OF SINGLE & DOUBLE W-BEAM CRASH BARRIER ARE GIVEN IN DRAWING NO:HP/RAH-BHA/MISC/04B SHEAT 02 OF 02.
 - THE LOCATION OF SINGLE/ DOUBLE W-BEAM CRASH BARRIER ARE FINALIZED BY PROJECT MANAGER (CSC) BY CONDUCT JOINT SITE INSPECTION WITH CONTRACTOR.

TENDER PURPOSE ONLY

<p>CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>					<p>CONSULTANT: SATRA SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050. E-mail: info@satragroup.in, Web: www.satragroup.in</p>					<p>PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p>					<p>DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA</p>					<p>TITLE: TYPICAL DETAILS OF DOUBLE W-BEAM CRASH BARRIER</p>					<p>REV: 0 SIZE: A3</p>																												
<p>ROAD NAME: UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>										<p>PACKAGE-IV</p>										<p>DRAWING NO: HP/RAH-BHA/MISC/04A</p>					<p>SHEET 01 OF 02</p>																												
<p>SCALE: NOT TO SCALE</p>										<p>REVISIONS:</p> <table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> </tbody> </table>										REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED								<p>DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA</p>										<p>DRAWING NO: HP/RAH-BHA/MISC/04A</p>					<p>SHEET 01 OF 02</p>				
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																																															



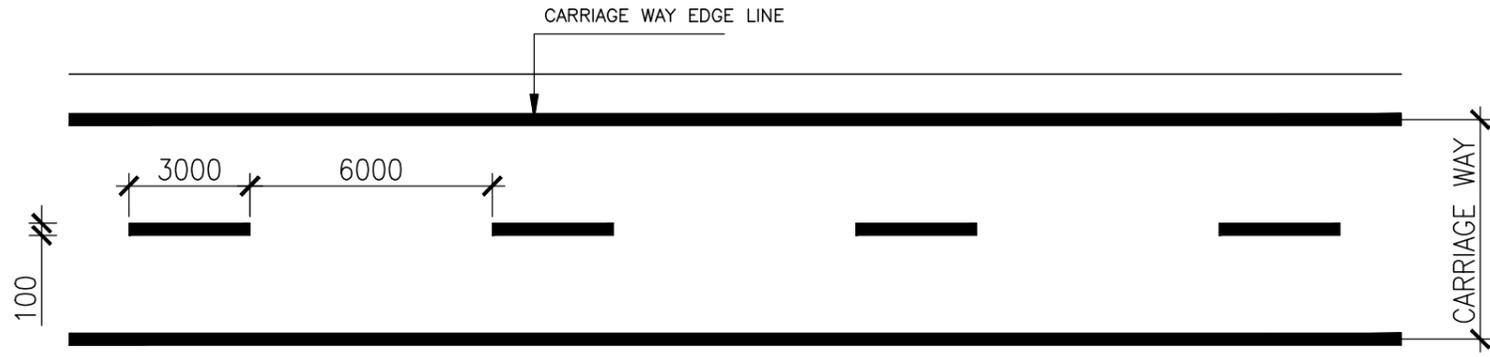
- NOTES:-**
1. ALL THE DIMENSIONS ARE IN MILLIMETRE UNLESS SPECIFIED.
 2. CORRUGATED METAL BEAM SHALL BE 3mm THICK & THICKNESS OF CHANNEL SECTION SHALL BE 5mm.
 3. W-BEAM SHALL BE COLD ROLL FORMED SECTION.
 4. ALL RAW MATERIAL SHALL CONFORM TO IS 5986 (Gr.Fe 410:ST-42) HOT DIP GALVANIZED TO 550 gm/Sqm.
 5. SPACERS SHALL BE AS PER IS :2062-1992.
 6. ANNULAR SPACE IN FOUNDATION AROUND THE CHANNEL UP TO GROUND LEVEL SHALL BE IN M15 GRADE CONCRETE.
 7. FOR SPLICING THE 'W' BEAM AT EACH LOCATION 8 NOS. BUTTON HEAD BOLTS M16, 30mm LONG SHALL BE USED.
 8. THE ENDS OF FASTENERS ARE TO BE FLARED BY PNEUMATIC OPERATION TO ENSURE THAT THE BOLTS ARE NOT REMOVABLE.
 9. BOLTS WILL BE WELDED AFTER JOINING W-BEAM & SPACER.
 10. ALL THE BOLTS SHALL CONFORM TO IS:1367, CLAUSE/CLASS 4.6.
 11. ALL OPERATIONS SHALL CONFORM WITH MoRTH CLAUSE NO 811.
 12. LOCATION OF THE CRASH BARRIER SHOWN ARE INDICATIVE. THE SAME SHALL BE FINALIZED BY THE CONTRACTOR IN CONSULTATION WITH CSC/HPRIDC AS PER SITE CONDITIONS.
 13. RETRO REFLECTIVE STRICKERS OF 30CM WIDE (2or3 COLOUR) SHALL BE PROVIDED ON TOP W BEAM AT ALTERNATIVE POST LOCATION.
 14. THE METAL SAFETY BARRIER SHALL BE COMPLIANT WITH TEST ACCEPTANCE CRITERIA OF EUROPEAN EN1317-2 STANDARD (OR) NCHRP 350 FOR CONTAINMENT LEVELS OF N2,H1 (OR) NCHRP 350 FOR CONTAINMENT LEVELS TL-3 & TL-4.
 15. THE CONTRACTOR SHALL PROVIDE ALL APPLICABLE CRASH TEST REPORTS THAT CONFORM THE BARRIER TO HAVE PASSED THE CRASH TESTS CONDUCTED BY AN INTERNATIONAL ACCREDITED CRASH TESTING LABORATORY HAVING ALL THE TESTING FACILITIES.
 16. THE DISTANCE BETWEEN THE BARRIER AND THE STAND OF THE EMBANKMENT/HAZARD TO PROVIDE ADEQUATE SUPPORT FOR THE PROPER OPERATION.WHERE SPACE IS CONSTRAINED AND LESSER SPACE IS AVAILABLE FOR DEFLECTION AND IS RECOMMENDED 1.5m SPACING IN BETWEEN POSTS.

CRASH BARRIER LOCATION				
S.No	Design Ch (Km)		Length (m)	Side
	From	To		
1	2+400	2+600	200	BOTH

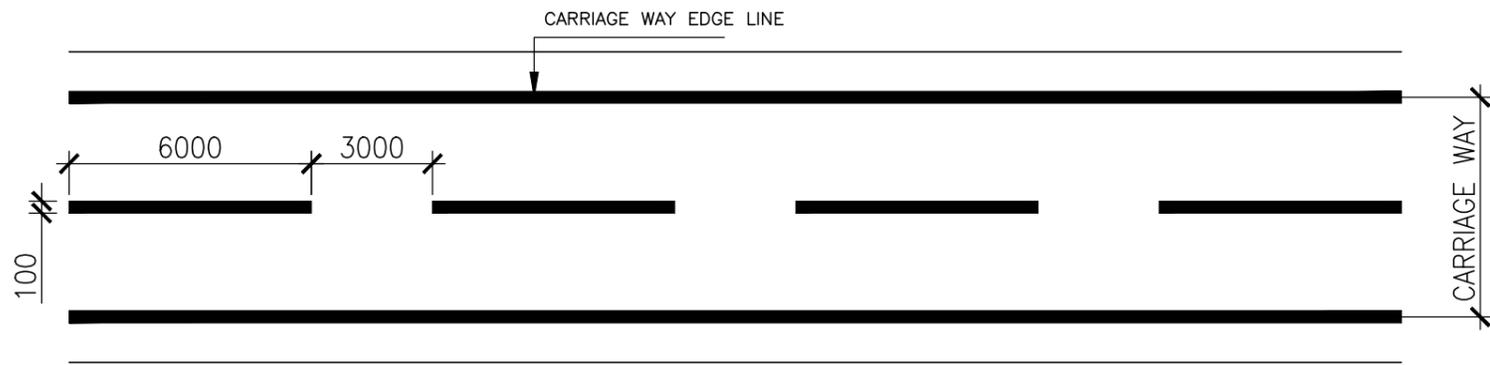
* THE LOCATION OF SINGLE/ DOUBLE W-BEAM CRASH BARRIER ARE FINALIZED BY PROJECT MANAGER (CSC) BY CONDUCT JOINT SITE INSPECTION WITH CONTRACTOR.

TENDER PURPOSE ONLY

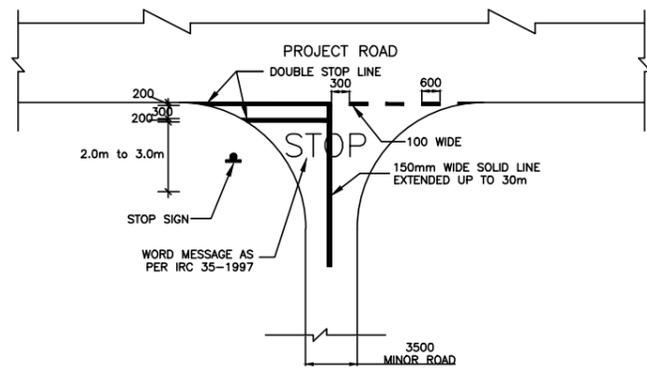
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> <tr> <td> </td> </tr> <tr> <td> </td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																						<p>CLIENT:</p> <p>HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>	<p>CONSULTANT:</p> <p>SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050. E-mail: info@satragroup.in, Web: www.satragroup.in</p>	<p>PROJECT:</p> <p>HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p> <p>SCALE: NOT TO SCALE</p>	<table border="1"> <tr> <td>DESIGNED</td> <td>MADHUBABU</td> </tr> <tr> <td>DRAWN</td> <td>DANIEL</td> </tr> <tr> <td>CHECKED</td> <td>CHANDRA/ASHIK</td> </tr> <tr> <td>APPROVED</td> <td>PRADEEP KAPLA</td> </tr> </table>	DESIGNED	MADHUBABU	DRAWN	DANIEL	CHECKED	CHANDRA/ASHIK	APPROVED	PRADEEP KAPLA	<p>TITLE : TYPICAL DETAILS OF SINGLE W-BEAM CRASH BARRIER</p> <p>DRAWING NO : HP/RAH-BHA/MISC/04B</p> <p>ROAD NAME : PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>	<table border="1"> <tr> <td>REV.</td> <td>0</td> </tr> <tr> <td>SIZE :</td> <td>A3</td> </tr> <tr> <td>SHEET</td> <td>02 OF 02</td> </tr> </table>	REV.	0	SIZE :	A3	SHEET	02 OF 02
	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																																									
DESIGNED	MADHUBABU																																															
DRAWN	DANIEL																																															
CHECKED	CHANDRA/ASHIK																																															
APPROVED	PRADEEP KAPLA																																															
REV.	0																																															
SIZE :	A3																																															
SHEET	02 OF 02																																															



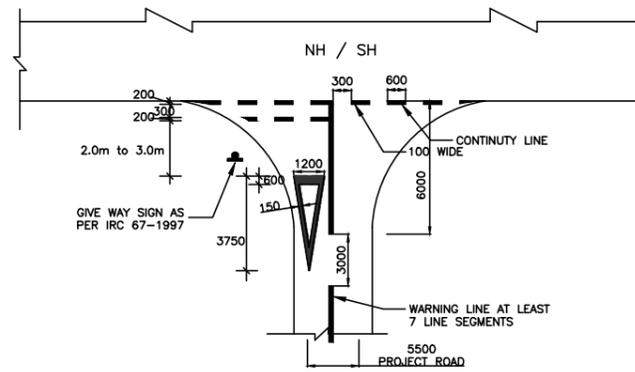
NORMAL SECTION



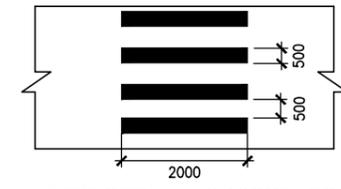
WARNING SECTION



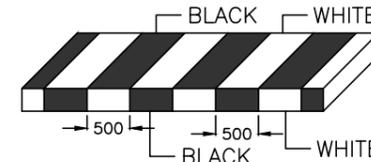
MINOR JUNCTION



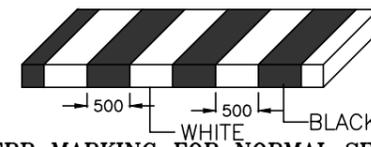
MAJOR JUNCTION



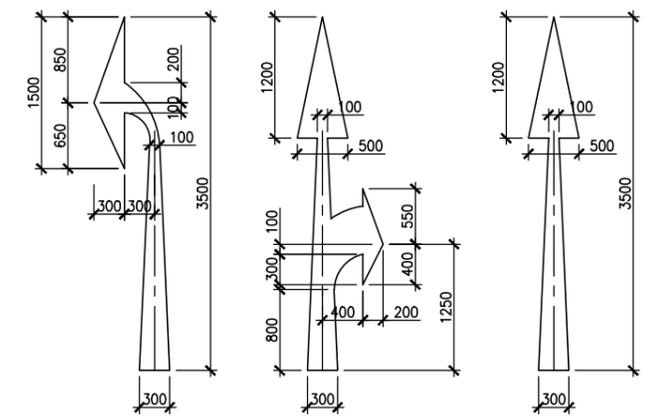
PEDESTRIAN CROSSINGS @ SCHOOLS, HOSPITAL & JUNCTIONS, ETC...



KERB MARKING FOR SHARP CURVE

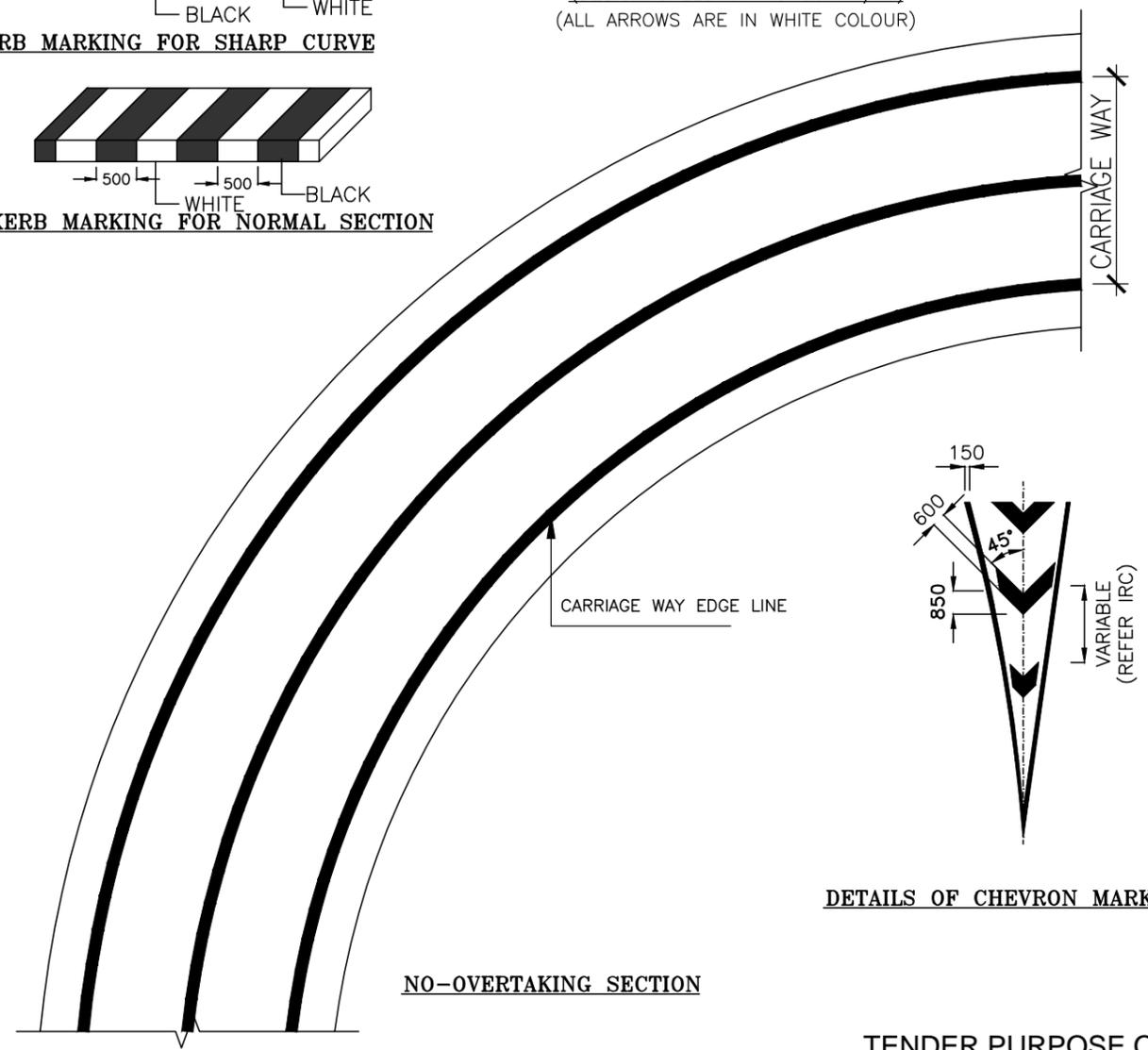


KERB MARKING FOR NORMAL SECTION



ARROW MARKING FOR ROUTE DIRECTION

(DESIGN SPEED UP TO 50 KM/Hr)
(ALL ARROWS ARE IN WHITE COLOUR)



NO-OVERTAKING SECTION

DETAILS OF CHEVRON MARKINGS

TENDER PURPOSE ONLY

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. LANE MARKINGS & OBJECT MARKINGS HAS BEEN DONE WITH HOT THERMOPLASTIC PAINT AND ARE IN ACCORDANCE WITH CLAUSE-803 OF "MORT & H" SPECIFICATION (FOURTH REVISION) 2001
3. ALL MARKINGS ARE IN ACCORDANCE WITH IRC:35-2015(FIRST REVISION)
4. PAINTING FOR MEDIAN KERB AND KERB SEPARATOR HAS BEEN DONE ON TOP & ON VERTICAL EXPOSED SURFACES WITH ORDINARY ROAD MARKING PAINT IN ACCORDANCE WITH CLAUSE-803.3 OF MORT & H SPECIFICATION (FOURTH) REVISION 2001.
5. MEDIAN KERB & ISLANDS ARE PAINTED ONLY AT INTERSECTIONS & MEDIAN OPENINGS WITH WHITE & BLACK SCHEME.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

SATRA SERVICES AND SOLUTIONS PVT LTD.
#1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:

HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : TYPICAL DETAILS OF ROAD MARKINGS IN RURAL & URBAN SECTION DRAWING NO : HP/RAH-BHA/MISC/006	REV.	0
DRAWN	DANIEL		SIZE :	A3
CHECKED	CHANDRA/ASHIK		ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	SHEET 01 OF 01
APPROVED	PRADEEP KAPLA			
PACKAGE-IV				

INFORMATORY / GUIDE SIGNS



SINGLE CHEVRON (Normal)
Fig.15.72



TRIPLE CHEVRON
Fig.15.75



OBJECT HAZARD (Left)
Fig.15.76



OBJECT HAZARD (Right)
Fig.15.77

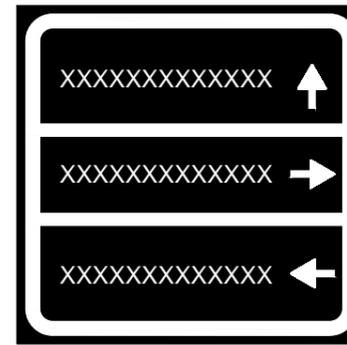


TWO WAY HAZARD MARKER
Fig.15.78

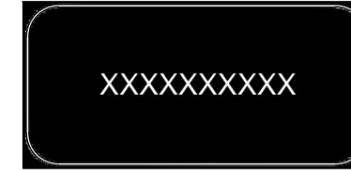
NOTE :

- 1) FOR ROAD SIGNS, SIZES AND DIMENSIONS OF LETTERING REFER IRC 67-2012 "CODE OF PRACTICE FOR ROAD SIGNS"
- 2) MATERIALS, BORDER, SITING AND COLOR FOR ROAD SIGNS SHALL BE AS PER IRC :67-2012.
- 3) CONCESSIONAIRE SHALL PREPARE STRIP PLAN SHOWING ALL SAFETY FEATURES AND GET APPROVED BY KRFB / ENGINEER INCHARGE BEFORE EXECUTION.
- 4) SIGNS AND ROAD MARKINGS SHOWN ARE ONLY INDICATIVE AND CONTRACTOR SHALL PREPARE SHOP DRAWINGS IN CONSULTATION WITH CSC/HPRIDC AS PER SITE CONDITIONS.

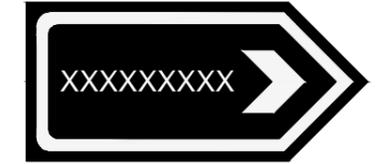
DIRECTION AND PLACE IDENTIFICATION SIGNS



ADVANCE DIRECTION / DESTINATION SIGN
Fig.16.01



PLACE IDENTIFICATION SIGN
Fig.16.06



DIRECTION SIGN
Fig.16.04

FACILITY INFORMATORY SIGNS



FILLING STATION
Fig.17.06



HOSPITAL
Fig.17.07



FIRST-AID POST
Fig.17.04



POLICE STATION
Fig.17.13



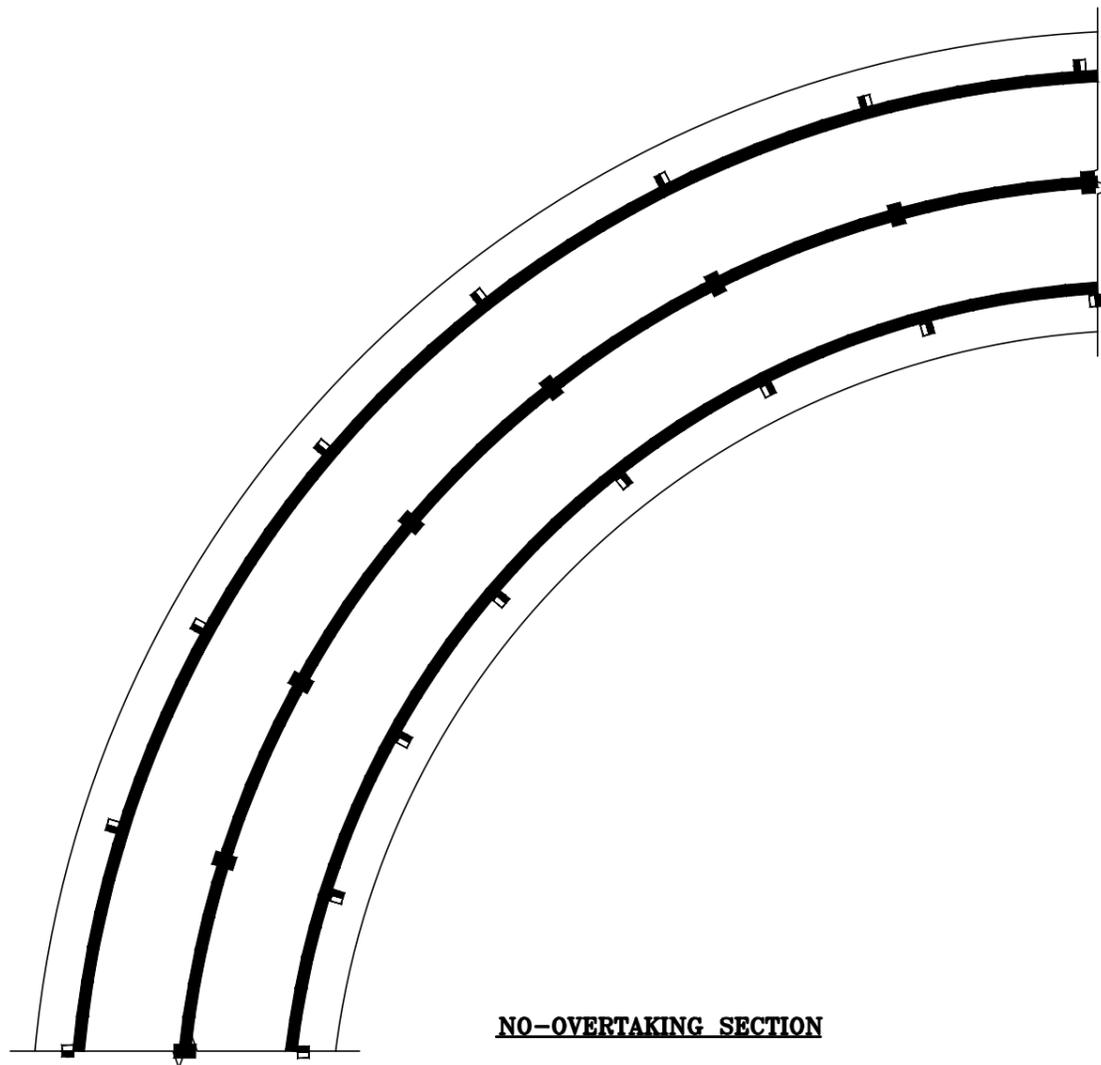
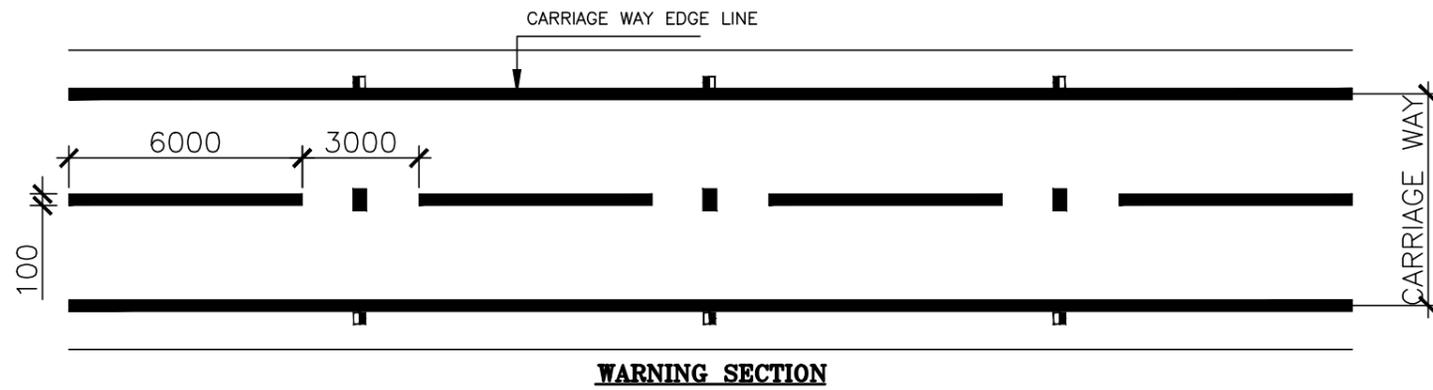
PARKING THIS SIDE
Fig.18.01



BUS STOP
Fig.17.35

TENDER PURPOSE ONLY

					CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA	TITLE : ROAD SIGNS (INFORMATORY SIGNS) DRAWING NO : HP/RAH-BHA/MISC/007	REV. 0 SIZE : A3
REV. DATE DESCRIPTION DESIGNED DRAWN CHECKED APPROVED						SCALE: NOT TO SCALE	ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	PACKAGE-IV	SHEET 01 OF 01	



ROAD STUDS DETAILS

Sl.No	DESCRIPTION OF SECTIONS	Length of Section to be Provided with Studs	Spacing of Studs	Location of Studs
1	All Sections of project road with warning & no overtaking sections	Length of Curve including its transitions.	6m	Center of the carriageway
2	All Sections of project road where vertical grade is steeper than 5%	Till the grade come to 5%	6m	Edge of the carriageway
3	All major/minor junctions and median openings	100m on either side of the junction / median opening (approaching side)	6m	Edge of the carriageway
4	Uncontrolled pedestrian crossing	Length of Built-up area	One row of studs across crossing the Main Carraigeway	

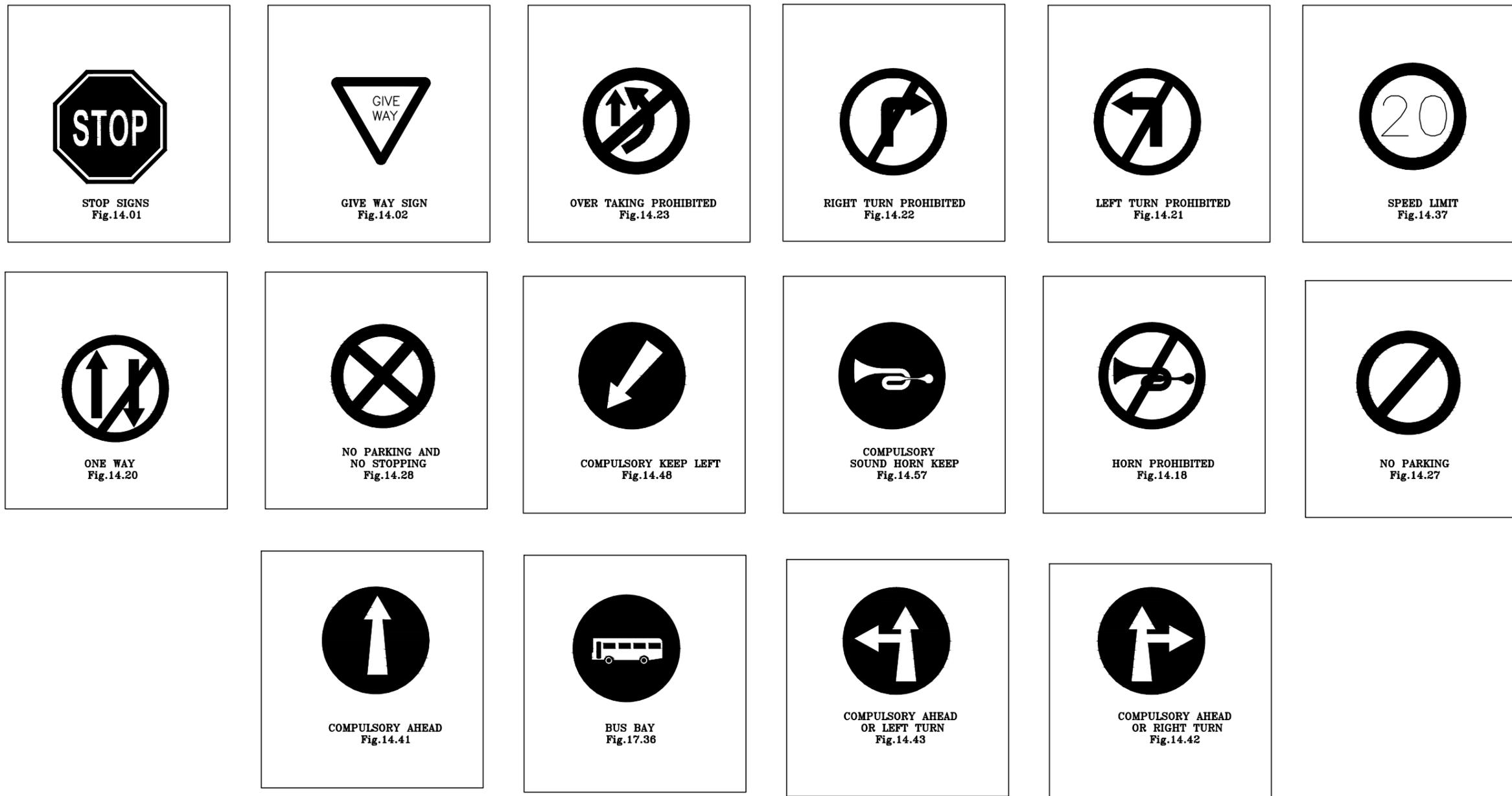
NOTES:

1. THE STUDS MAY BE DEPRESSIBLE OR NON-DEPRESSIBLE
2. MAXIMUM HEIGHT FOR A DEPRESSIBLE STUD IS 25mm AND NON-DEPRESSIBLE STUD IS 20mm
3. ALL THE STUDS COLORS SHALL CONFORM TO BS EN 1463
4. THE ROAD STUDS SHALL BE PRISMATIC RETRO REFLECTIVE TYPE WITH TWO MARKERS CONFIRMING TO ASTM AS PER IRC 35-2015

TENDER PURPOSE ONLY

	CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA	TITLE : TYPICAL DETAILS OF ROAD STUDS DRAWING NO : HP/RAH-BHA/MISC/008	REV. 0 SIZE : A3														
ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.			SCALE: NOT TO SCALE	PACKAGE-IV		SHEET 01 OF 01														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED													
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED														

MANDATORY / REGULATORY SIGNS



NOTE :

- 1) FOR ROAD SIGNS, SIZES AND DIMENSIONS OF LETTERING REFER IRC 67-2012 "CODE OF PRACTICE FOR ROAD SIGNS"
- 2) MATERIALS, BORDER, SITING AND COLOR FOR ROAD SIGNS SHALL BE AS PER IRC :67-2012.
- 3) CONCESSIONAIRE SHALL PREPARE STRIP PLAN SHOWING ALL SAFETY FEATURES AND GET APPROVED BY KRFB / ENGINEER INCHARGE BEFORE EXECUTION.
- 4) SIGNS AND ROAD MARKINGS SHOWN ARE ONLY INDICATIVE AND CONTRACTOR SHALL PREPARE SHOP DRAWINGS IN CONSULTATION WITH CSC/HPRIDC AS PER SITE CONDITIONS.

TENDER PURPOSE ONLY

						CLIENT:  HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.		CONSULTANT:  SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in		PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)		DESIGNED MADHUBABU DRAWN DANIEL CHECKED CHANDRA/ASHIK APPROVED PRADEEP KAPLA		TITLE : ROAD SIGNS (MANDATORY SIGNS)		REV. 0 SIZE : A3	
								SCALE: NOT TO SCALE		ROAD NAME : PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.		DRAWING NO : HP/RAH-BHA/MISC/009		SHEET 01 OF 01			
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED											

CAUTIONARY / WARNING SIGNS

 LEFT HAND CURVE Fig.15.01	 RIGHT HAND CURVE Fig.15.02	 RIGHT REVERSE BEND Fig.15.05	 LEFT REVERSE BEND Fig.15.06	 SERIES OF BEND Fig.15.07	 SIDE ROAD RIGHT Fig.15.09	 SIDE ROAD LEFT Fig.15.10	 'Y' INTER-SECTION Fig.15.11
 'Y' INTER-SECTION Fig.15.12	 'Y' INTER-SECTION Fig.15.13	 CROSS ROAD SIGNS Fig.15.14	 T-INTERSECTION MAJOR ROAD AHEAD Fig.15.18	 MAJOR ROAD AHEAD Fig.15.19	 STAGGERED INTERSECTION Fig.15.20	 STAGGERED INTERSECTION Fig.15.21	 T-INTERSECTION Fig.15.17
 NARROW BRIDGE AHEAD Fig.15.25	 PEDESTRIANS CROSSING Fig.15.33	 SCHOOL AHEAD Fig.15.34	 BUILT-UP-AREA Fig.15.35	 RUMBLE STRIP Fig.15.50	 OVERHEAD CCKJLES Fig.15.57	 <div style="border: 1px solid black; padding: 5px; display: inline-block;">END</div> Fig.15.42 + SUPPLIMENTARY PLATE "END" AT THE LEVELING SIDE OF WORK ZONE MEN AT WORK	

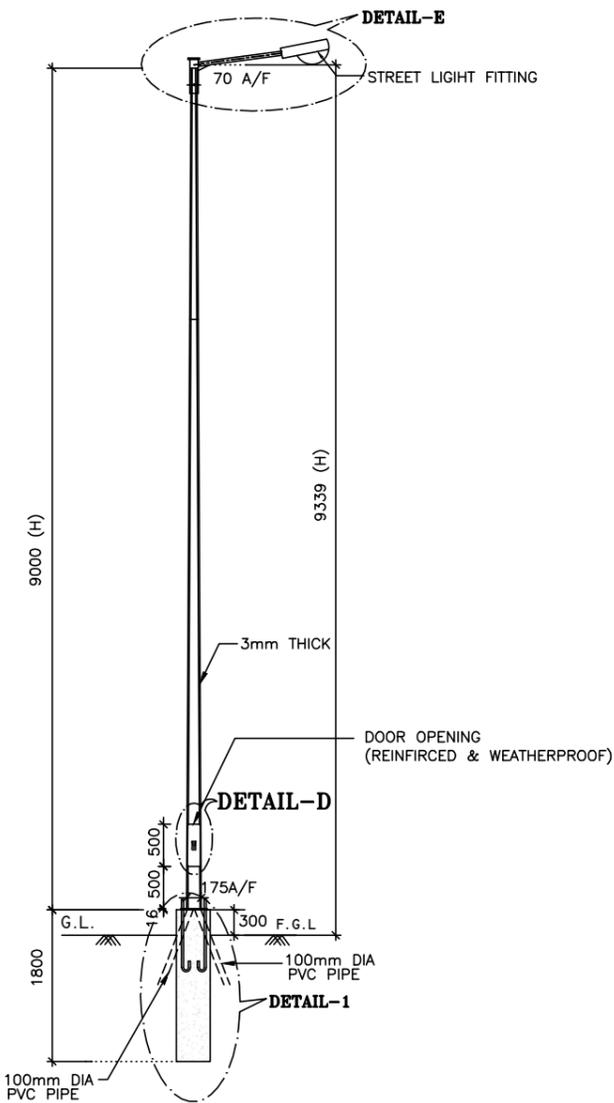

 TRAFFIC SIGNALS
 Fig.15.16

NOTE :

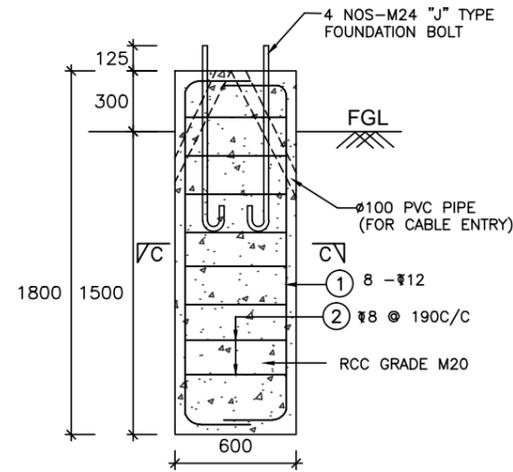
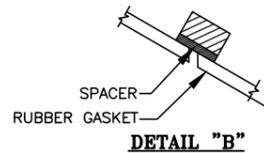
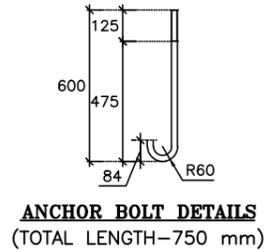
- FOR ROAD SIGNS, SIZES AND DIMENSIONS OF LETTERING REFER IRC 67-2012 "CODE OF PRACTICE FOR ROAD SIGNS"
- MATERIALS, BORDER, SITING AND COLOR FOR ROAD SIGNS SHALL BE AS PER IRC :67-2012.
- CONCESSIONAIRE SHALL PREPARE STRIP PLAN SHOWING ALL SAFETY FEATURES AND GET APPROVED BY KRFB / ENGINEER INCHARGE BEFORE EXECUTION.
- SIGNS AND ROAD MARKINGS SHOWN ARE ONLY INDICATIVE AND CONTRACTOR SHALL PREPARE SHOP DRAWINGS IN CONSULTATION WITH CSC/HPRIDC AS PER SITE CONDITIONS.

TENDER PURPOSE ONLY

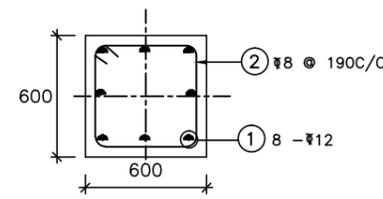
CLIENT:  HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.						CONSULTANT:  SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in						PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP) SCALE: NOT TO SCALE						DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA		TITLE : ROAD SIGNS (WARNING SIGNS) DRAWING NO : HP/RAH-BHA/MISC/010		REV. 0 SIZE : A3	
ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.						PACKAGE-IV						SHEET 01 OF 01											



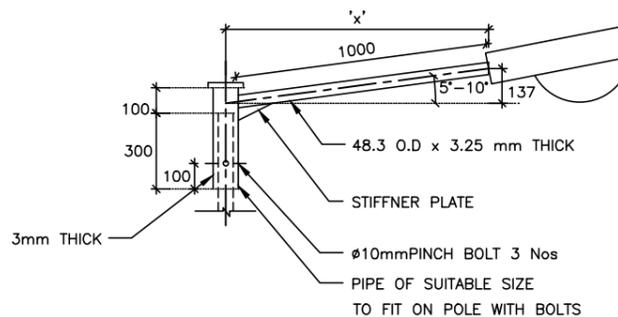
STREET LIGHT POLE - TYPICAL ARRANGEMENT



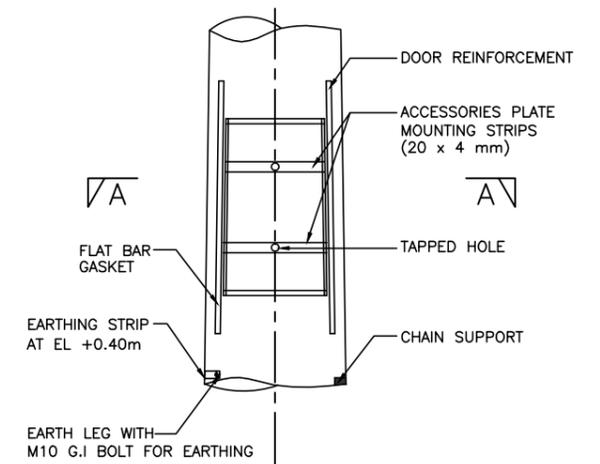
**FOUNDATION DETAILS
DETAIL-1**



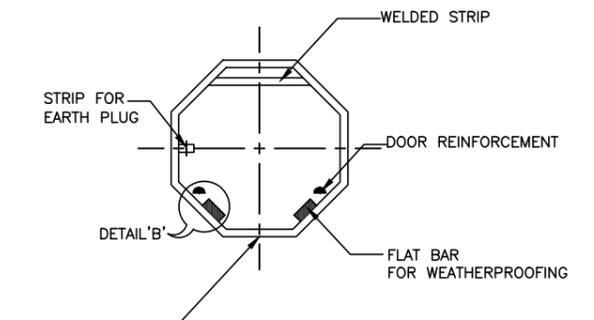
SECTION C-C



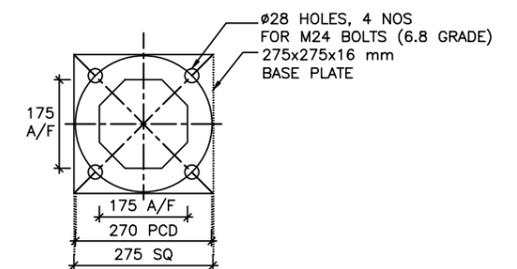
**DETAIL FOR DOUBLE ARM BRACKET FOR 9m POLE
DETAIL -E**



DETAIL "D"



SECTION A-A



BASE PLATE

POLE EARTHING:

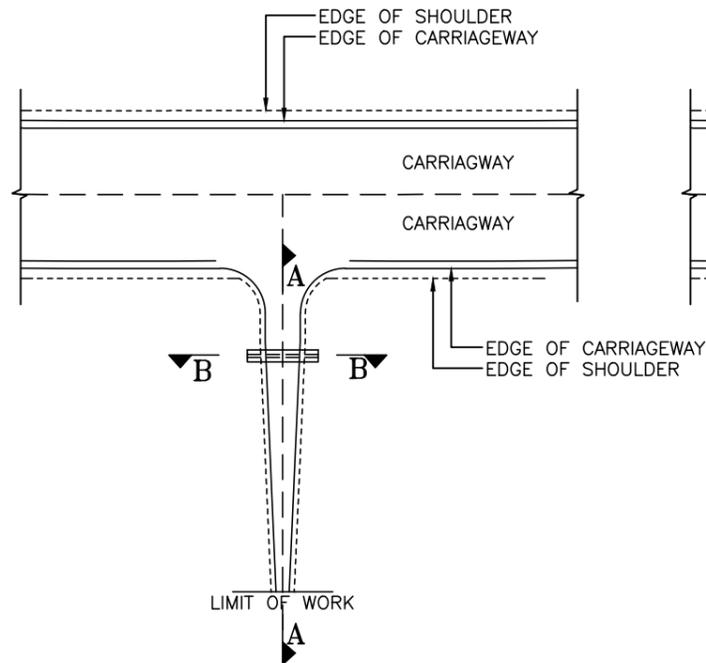
1. SINGLE RUN OF NO.6 SWG GI WIRE SHALL RUN ALONG WITH EACH UNDERGROUND CABLE FROM THE PILLAR BOX TO ALL LIGHT POLES / HIGH MAST FOR LOOP EARTHING.
2. PIPE EARTHING FOR THE LIGHT POLES SHALL BE PROVIDED AT INTERVALS OF FIVE POLES.
3. LIGHTING SHALL BE IN ACCORDANCE WITH IRC CODES 4 LANE/2 LANE/INTERMEDIATE LANE

NOTES:

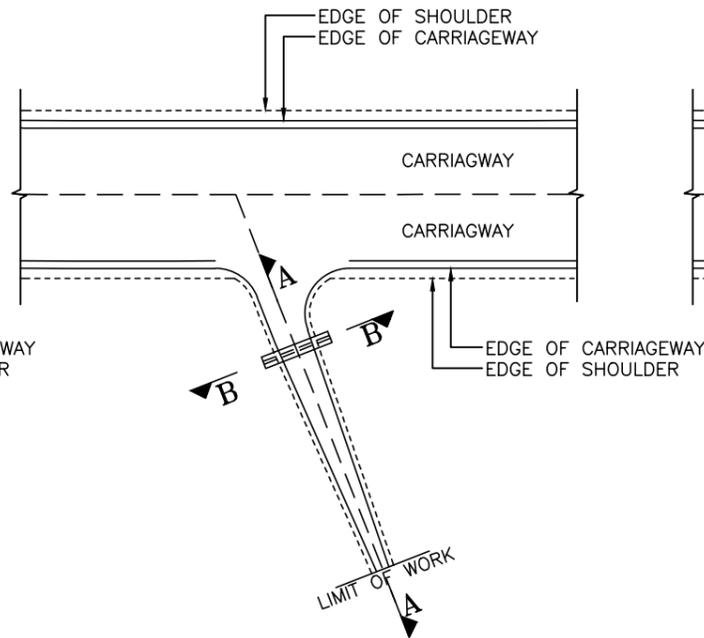
1. GRADE OF CONCRETE SHALL BE M20.
2. GRADE OF STEEL SHALL BE Fe415.
3. CLEAR COVER TO ANY REINFORCEMENT SHALL BE 50mm
4. LOCATION OF THE LIGHT POST SHALL BE FINALIZED IN CONSULTATION WITH CONSTRUCTION SUPERVISION CONSULTANCY (CSC) /HPRIDC AND CONCERNED AUTHORITY AS PER SITE CONDITION.

TENDER PURPOSE ONLY

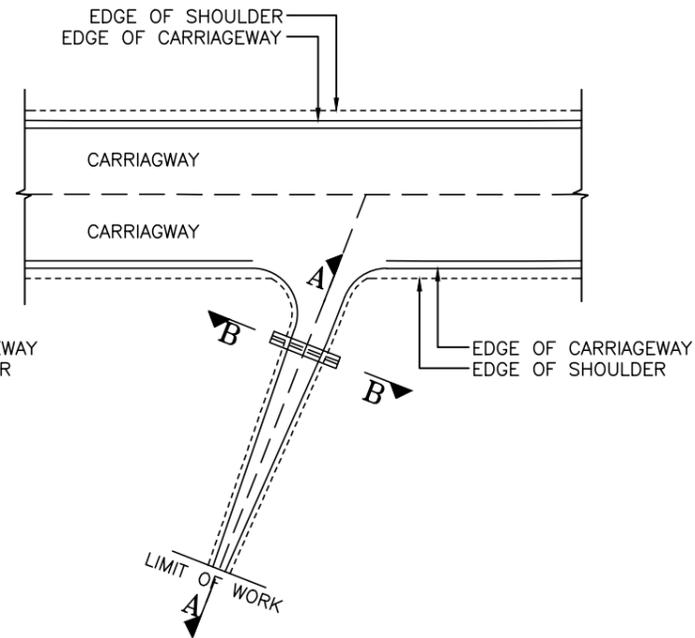
<p>CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>						<p>CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in</p>			<p>PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p>			<p>DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA</p>		<p>TITLE: TYPICAL DETAILS OF ELECTRICAL POLE (9m Height)</p> <p>DRAWING NO: HP/RAH-BHA/MISC/011</p>		<p>REV. 0 SIZE: A3</p>
<p>ROAD NAME: UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>						<p>SCALE: NOT TO SCALE</p>			<p>PACKAGE-IV</p>		<p>SHEET 01 OF 01</p>					
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED										



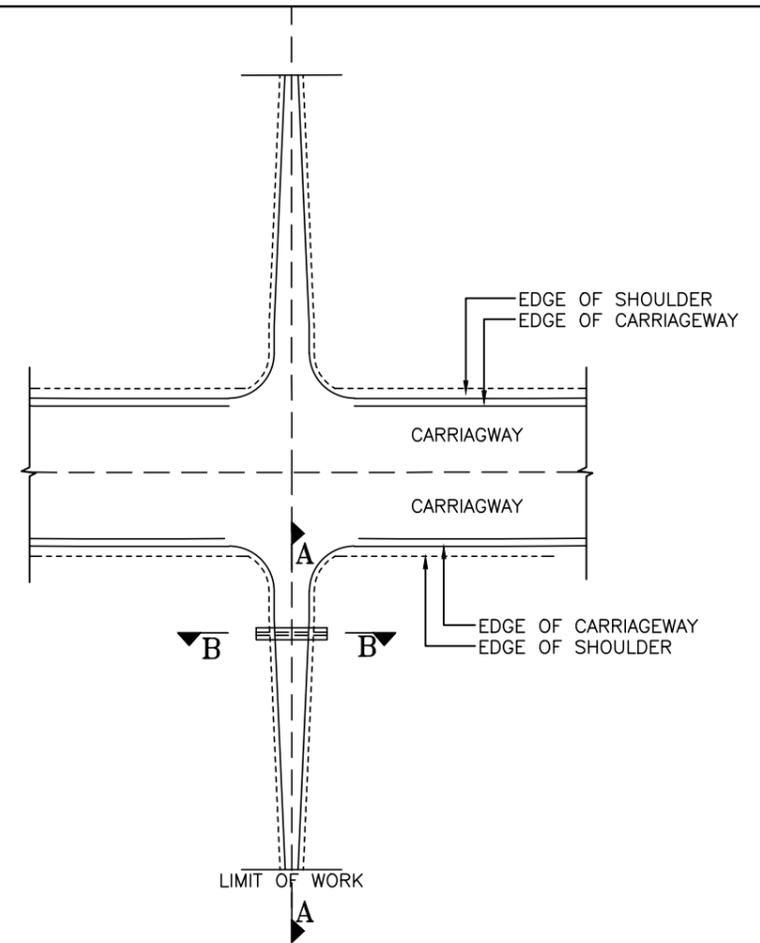
MINOR JUNCTION TYPE-1



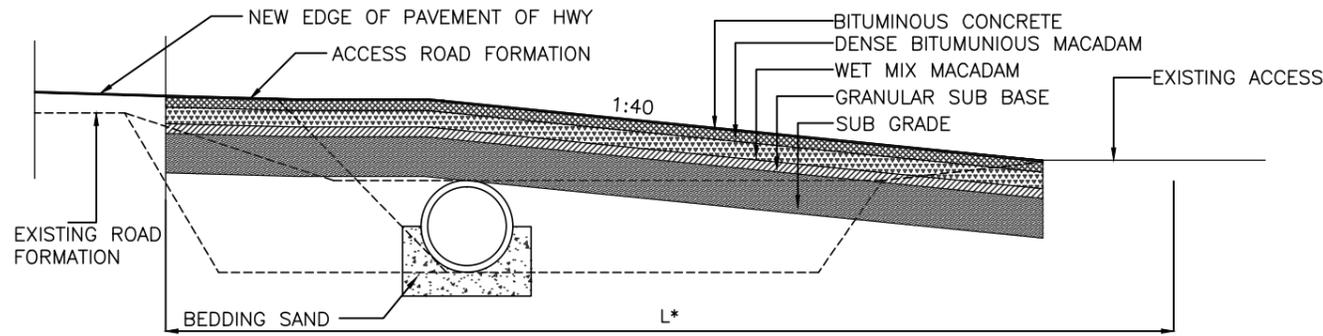
MINOR JUNCTION TYPE-2



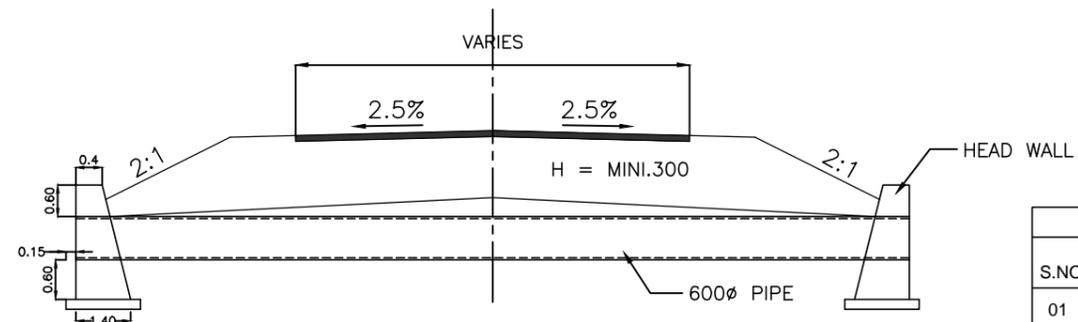
MINOR JUNCTION TYPE-3



MINOR JUNCTION TYPE-4



SECTION A-A ACCESS PROFILE



SECTION B-B

LIST OF MINOR JUNCTIONS		
S.NO	PROPOSED CHAINAGE	TYPE OF JUNCTIONS
01	0+000	Y
02	0+130	Y
03	0+835	T
04	0+920	Y
05	1+070	Y
06	1+270	Y
07	1+470	Y
08	2+045	Y
09	2+420	Y

TENDER PURPOSE ONLY

Notes

1. All Dimensions are in Millimeters unless specified.
2. L* = Level of Approach Depends upon level Difference Between Main carriageway & access road.
3. Earthen Transition to the minor road with Max. 5% gradient will be provided for 25m from the Earthen Shoulder and bituminous improvement on minor road for 15m.
4. Access culverts with 600mm Dia NP-4 type culverts to be provided matching with the side drain. The size of culvert shall be confirmed by the contractor in consultation with CSC/HPRIDC as per site condition, as it may vary from 600mm-900mm dia.
5. Standard road marking/road sign Boards shall be as per standard road furniture drawing.
6. Transition length of the access road shall be amended by the Project Engineer to suite the site condition.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:



HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:



SATRA SERVICES AND SOLUTIONS PVT LTD.
#1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:

HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE:

NOT TO SCALE

DESIGNED

MADHUBABU

DRAWN

DANIEL

CHECKED

CHANDRA/ASHIK

APPROVED

PRADEEP KAPLA

ROAD NAME :

UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.

TITLE : TYPICAL DRAINAGE DIVERSION AT JUNCTIONS

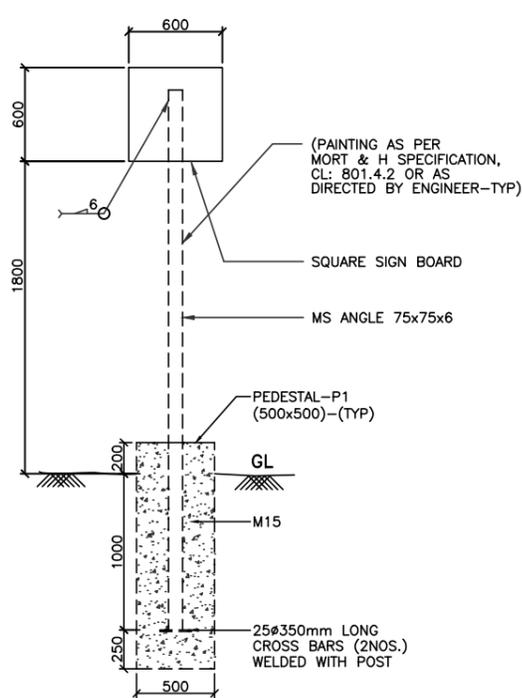
DRAWING NO : HP/RAH-BHA/MISC/012

PACKAGE-IV

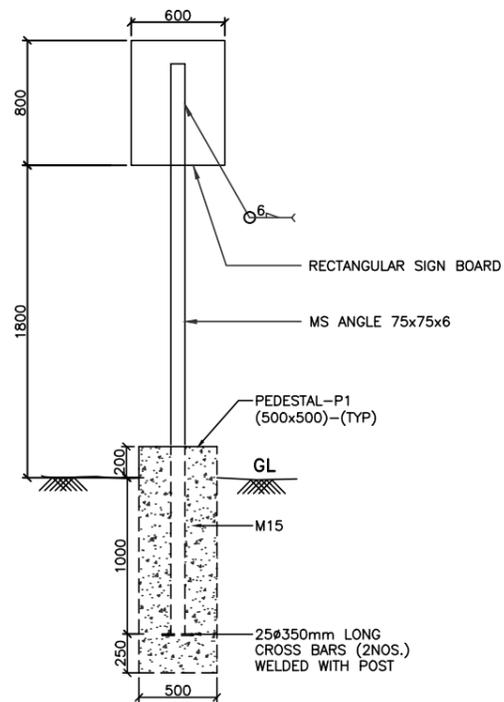
REV. 0

SIZE : A3

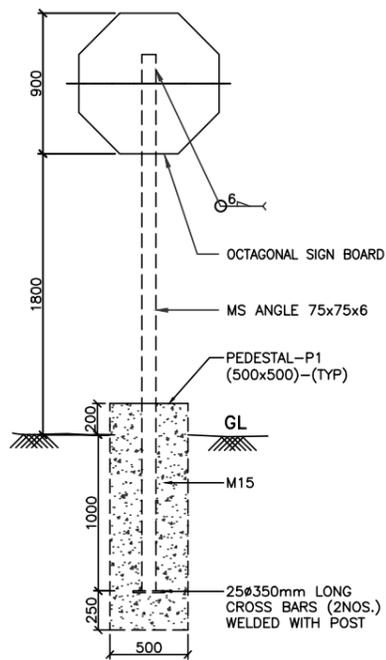
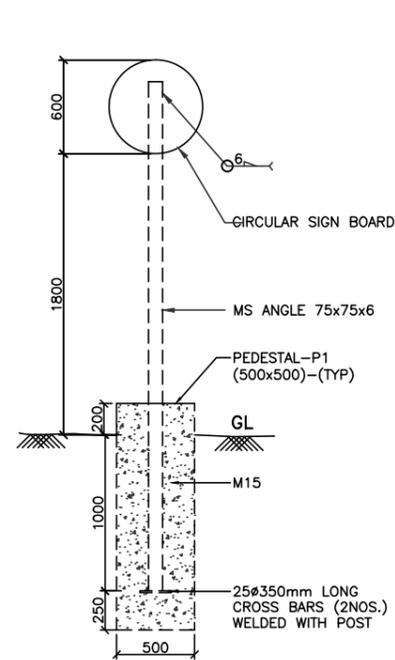
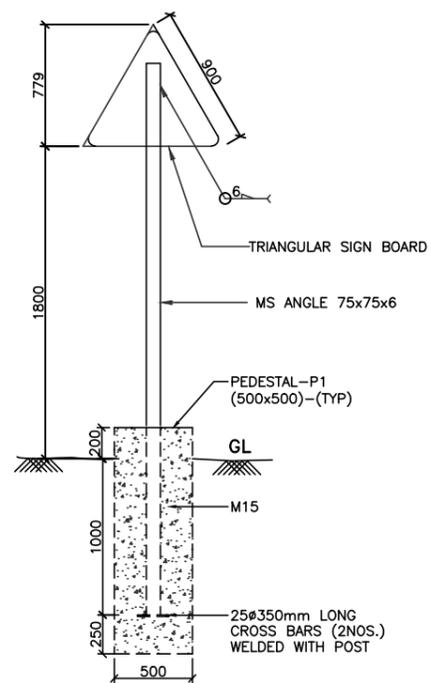
SHEET 01 OF 01



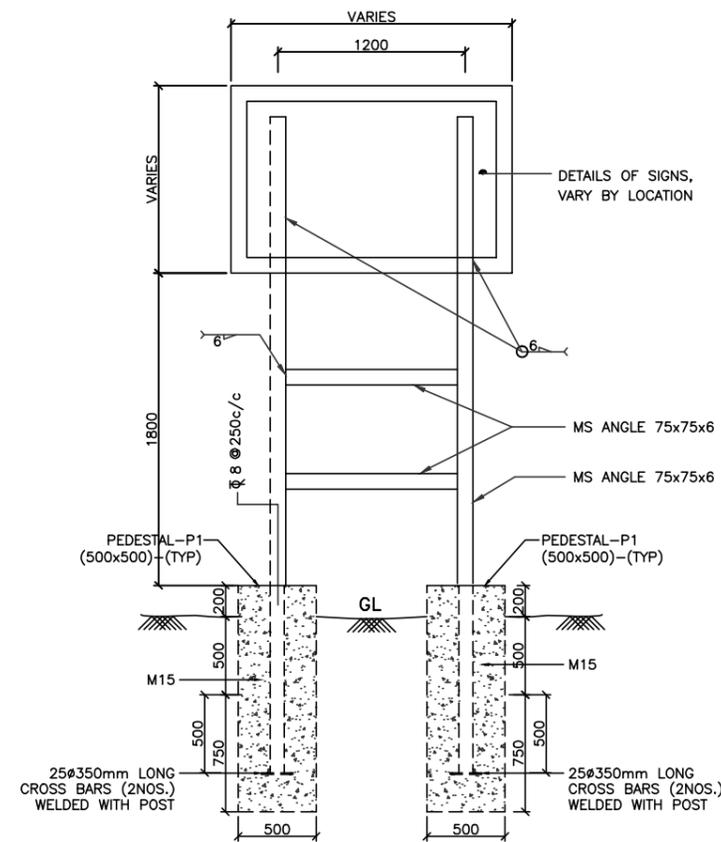
FOR INFORMATORY SIGNS



FOR WARNING SIGNS



FOR MANDATORY SIGNS



DESTINATION SIGN BOARD STRUCTURE

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:



HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:



SATRA SERVICES AND SOLUTIONS PVT LTD.
#1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:

HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE:

NOT TO SCALE

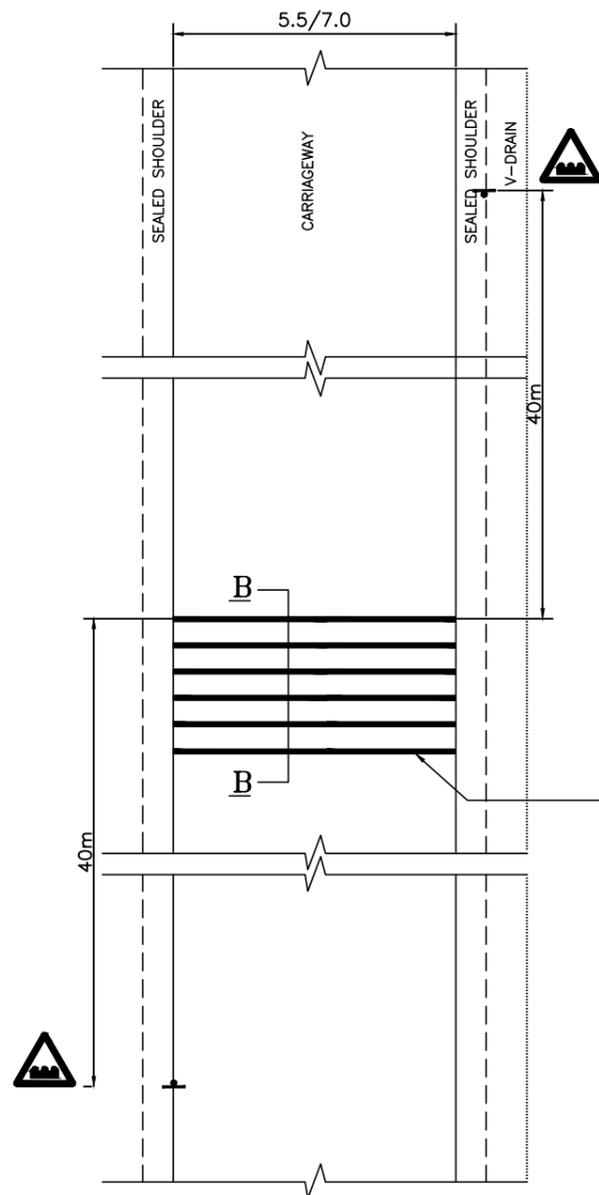
DESIGNED	MADHUBABU
DRAWN	DANIEL
CHECKED	CHANDRA/ASHIK
APPROVED	PRADEEP KAPLA

TITLE :	TYPICAL DRAWING FOR TRAFFIC SIGN POSTS
DRAWING NO :	HP/RAH-BHA/MISC/013

REV.	0
SIZE :	A3

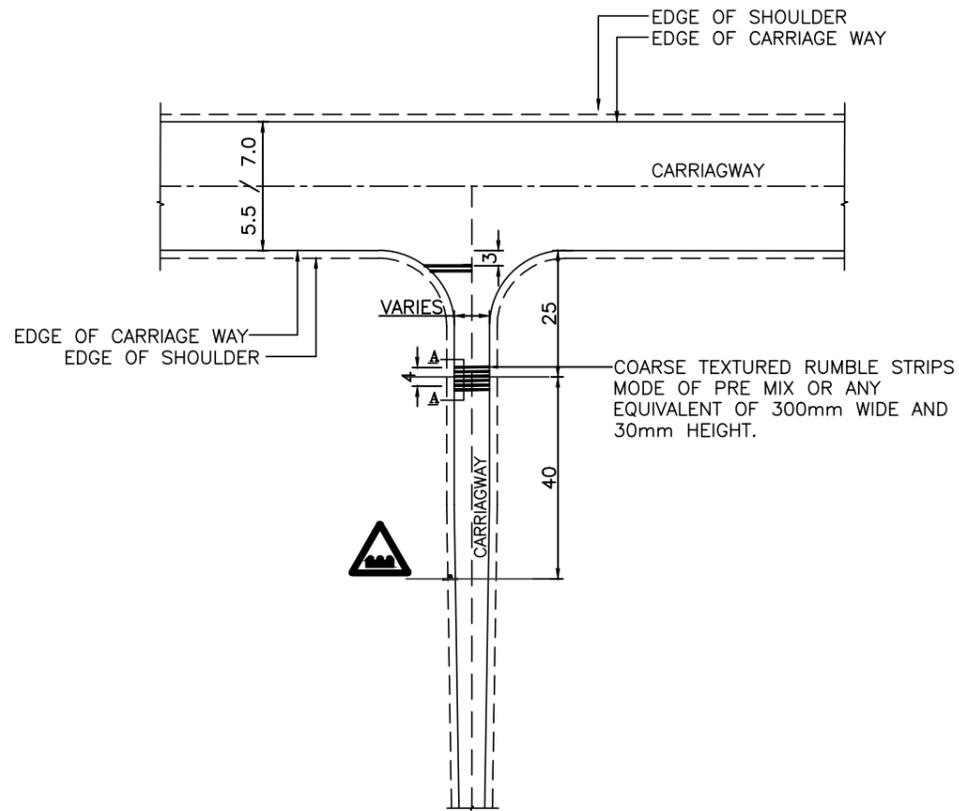
ROAD NAME :	PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.
-------------	---

SHEET 01 OF 01

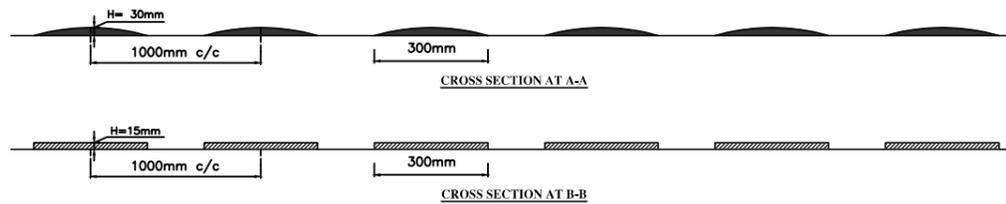


DETAILS OF TRANSVERSE BAR MARKINGS

THERMOPLASTIC PAINT OF 300MM WIDE AND 15 MM HEIGHT, AT 1000MM APART. ALTERNATIVELY, MADE OF MASTIC ASPHALT OR ANY EQUIVALENT MATERIAL WHICH WOULD PROVIDE 15MM HEIGHT.



LOCATION OF RUMBLE STRIPS ON CROSS ROADS



- NOTES:-**
1. THE DESIGN OF ROAD HUMP IS IN ACCORDANCE WITH IRC: 99-2018 GUIDE LINES.
 2. ROAD HUMP IS PROPOSED AT UNCONTROLLED INTERSECTIONS OF MINOR ROADS WITH MAJOR ROADS ON THE MINOR ARMS.
 3. THE WARNING SIGNS SHOULD BE OF THE DESIGN 'HUMP OR ROUGH ROAD' AS GIVEN IN IRC: 67-2012 SHOULD BE INSTALLED AT SPECIFIED DISTANCE AHEAD OF RUMBLE STRIP/ROAD HUMP.
 4. PAINT SHALL BE HOT APPLIED THERMOPLASTIC MATERIAL CONFORMING TO M.O.R.T & H SPEC. CL.803.4
 5. RUMBLE STRIPS ARE PROVIDED AT VILLAGE AND URBAN APPROACHES.
 6. REFLECTIVE PAVEMENT MARKERS ARE PROVIDED BEFORE AND AFTER RUMBLE STRIPS ROAD HUMP.
 7. IN THE ABSENCE OF PAVED SHOULDER, WIDTH OF THE ROAD HUMP & RUMBLE STRIP SHALL BE LIMITED TO CARRIAGEWAY EDGE.

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

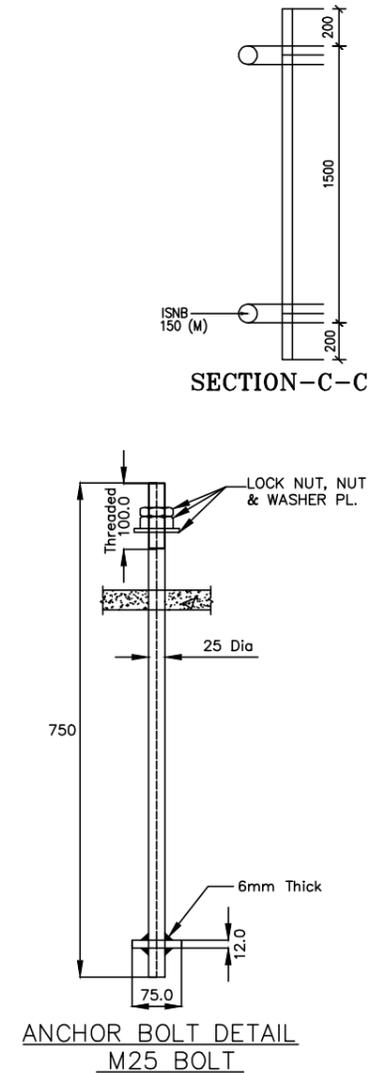
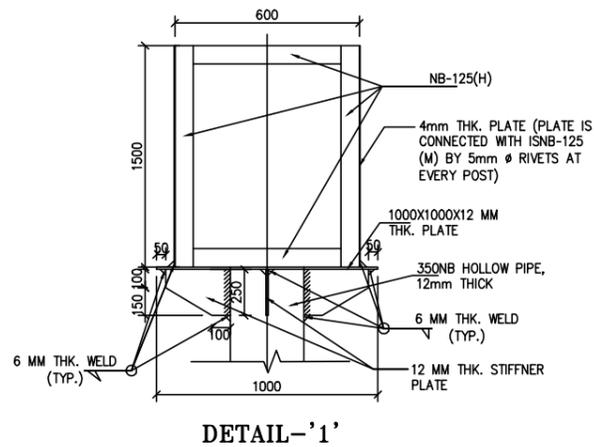
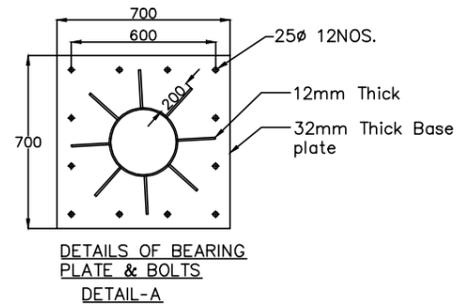
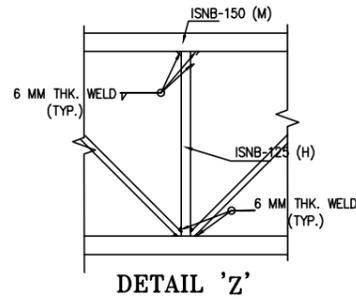
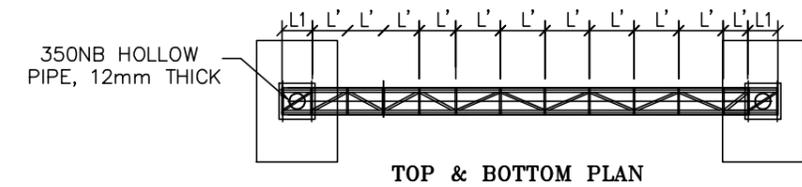
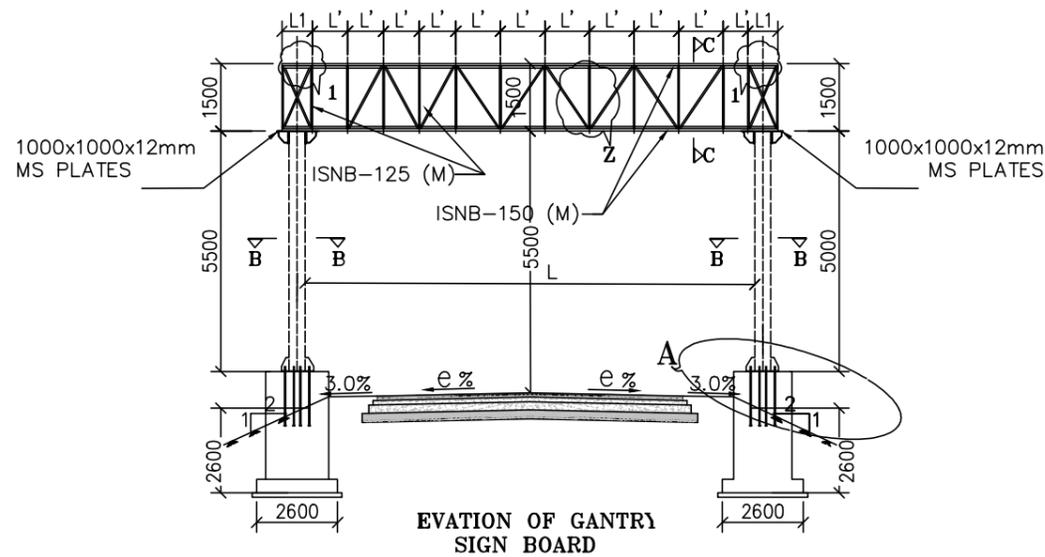
CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
SCALE:
 NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : DETAILS OF RUMBLE STRIPS/TBM DRAWING NO : HP/RAH-BHA/MISC/014	REV.	0
DRAWN	DANIEL		SIZE :	A3
CHECKED	CHANDRA/ASHIK		ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	SHEET 01 OF 01
APPROVED	PRADEEP KAPLA			

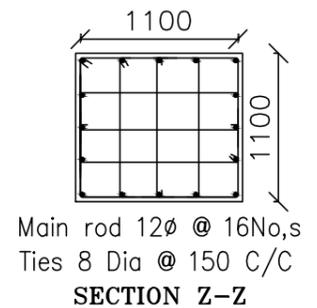
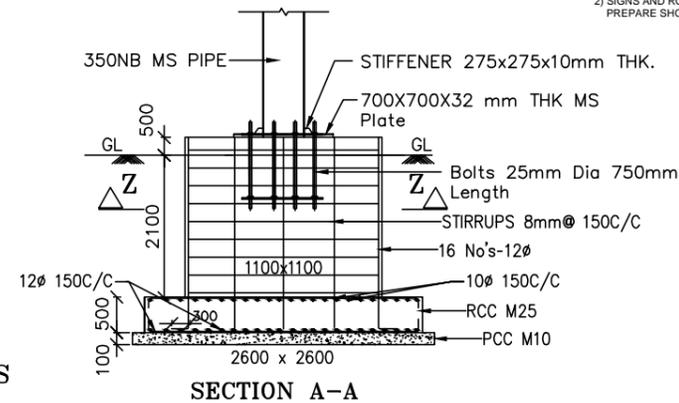
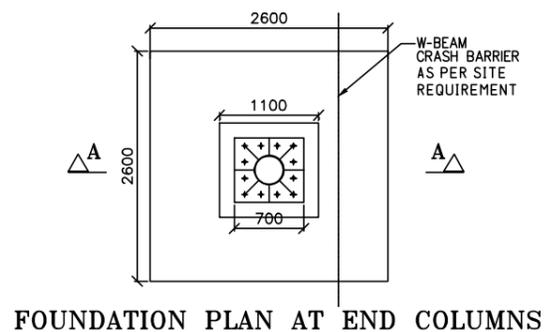
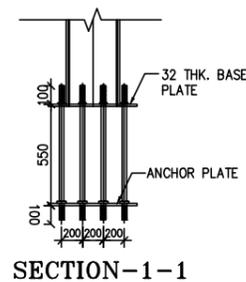
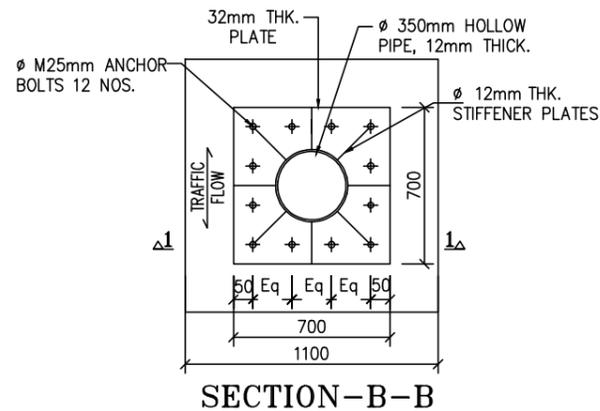
L	L'	L'	L'	L1
UPTO 11 m	1500	1500	1500	650



S.NO	STRUCTURAL MEMBER	THICKNESS mm	UNIT WEIGHT KG/M	GRADE OF STEEL
1	350 NB(H)	12.0	101.68	240
2	150 NB(H)	8.0	31.63	240
3	125 NB(H)	5.4	17.89	240

- NOTES:-**
- A) FOR GENERAL-**
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
 - PATTERN OF COLOUR TO BACKGROUND (BORDER, LETTERS & ARROW) AS PER 8 & TABLE 8.3 OF IRC:67-2012.
- B) FOR R.C.C.-**
- DULY WRITTEN DIMENSIONS ARE TO BE FOLLOWED NEITHER THE BARS SHALL BE COUNTED NOR THE DIMENSIONS SCALED FROM DRAWINGS.
 - WATER FOR CONSTRUCTION PURPOSES SHALL CONFORM TO RELEVANT CLAUSES OF IS 456-2000.
 - REINFORCED CEMENT CONCRETE SHALL BE DESIGN MIX-M25.
 - ALL STEEL REINFORCEMENT SHALL BE OF Fe 550.
 - LAP LENGTH/ DEVELOPMENT LENGTH FOR REINFORCEMENT BARS 58 X DIA.
 - CLEAR COVER FOR-
 - COLUMN/ PEDESTAL - 50 mm (FOR OUTER FACE OF LATERAL TIES)
 - FOUNDATION - 50 mm.
 - LAP SHOULD NOT BE PROVIDED -
 - WITH IN A JOINT.
 - WITH IN A DISTANCE 2nd FROM JOINT FACE.
 - WITH IN A DISTANCE 1/2 LENGTH OF MEMBER FROM THE JOINT FACE.
 - NOT MORE THAN 50% OF BAR SHALL BE SPLICED AT ONE SECTION.
 - SAFE BEARING CAPACITY OF 15 T/M² HAS TO BE ENSURED ON SITE BEFORE LAYING THE FOUNDATION.
- C) FOR WELDING-**
- ALL FILLET AND BUTT WELDING SHALL BE 6 mm THK. U.N.O.
 - DIA OF ELECTRODE ROD USED SHALL BE 5 mm FOR UP TO 10mm THK. GUSSET PLATE & 8 mm FOR THICKNESS GREATER THAN 10mm AND SHALL BE AS PER IS-814-1974.
 - LENGTH OF ELECTRODE SHOULD BE 450 mm +/- 6 mm.
 - THE CONTACT END OF THE ELECTRODE SHALL BE BARE END CLEAN T TO A LENGTH OF 20 TO 30 mm.
 - THE FLUX COVERING SHALL BE OF UNIFORM IN OUTSIDE DIAMETER AND THICKNESS.
 - THE COVERING SHALL BURN OR FUSE EVENLY.
 - A DEEP PENETRATION ELECTRODES SHALL PROVIDED A MINIMUM PENETRATION OF 4 mm BEYOND THE ROOT, WHERE THE ELECTRODE IS CONTINUOUSLY DEPOSITED IN A CLOSE SQUARE TEE JOINT BETWEEN TWO PLATES, EACH OF THICKNESS EQUAL TO TWICE THE CORE DIAMETER THE ELECTRODE.
 - THE WELDING SHALL BE AS PER IS 820 CODE OF PRACTICE FOR THE USE OF WELDING IN TUBULAR CONSTRUCTION.
 - ALL PAINTING WORKS SHALL CONFIRM TO I.S. 1479 PART- I & II AND I.S. 8629.

- NOTES:-**
- AS PER 4736, ALL STRUCTURAL STEEL MEMBERS SHOULD BE HOT DIP GALVANIZED WITH ZINC COATING.
 - BOLTS SHALL BE CONFIRMING TO IS 12427 : 1988.
 - THE GRADE OF STEEL YST 240 SHALL BE USED FOR THE STEEL TUBES AS PER IS 1161 : 2014.
 - ANCHOR BOLTS SHALL BE OF CLASS 4.6.
 - GRADE OF CONCRETE FOR PEDESTAL M25.
 - STRUCTURAL STEEL OF GRADE Fe:250 SHALL BE USED FOR BASE PLATE.
- 1) FOR ROAD SIGNS, SIZES, MATERIALS, BORDER, SITING, COLOR AND DIMENSIONS OF LETTERING REFER IRC 67-2012
2) SIGNS AND ROAD MARKINGS SHOWN ARE ONLY INDICATIVE AND CONCESSIONAIRE SHALL PREPARE SHOP DRAWINGS AS PER ACTUAL SITE CONDITIONS.



TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

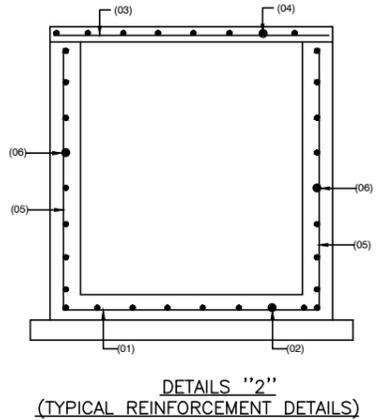
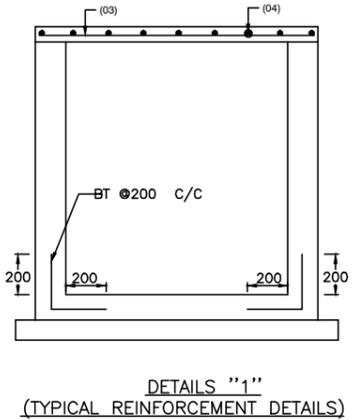
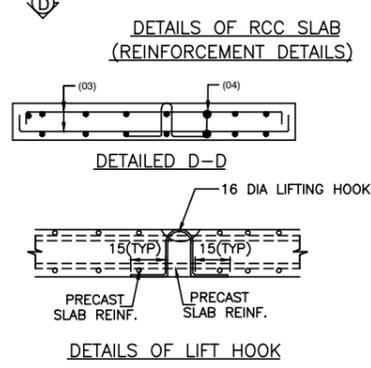
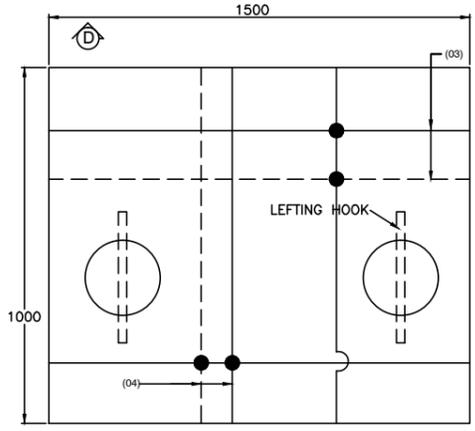
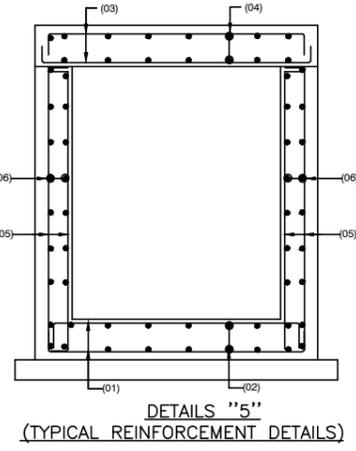
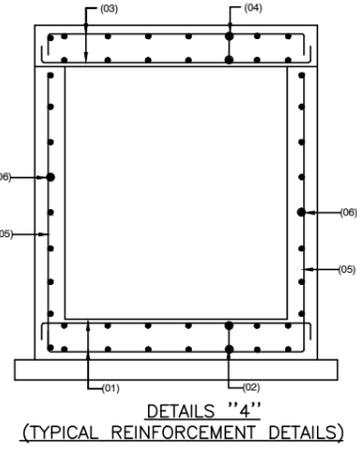
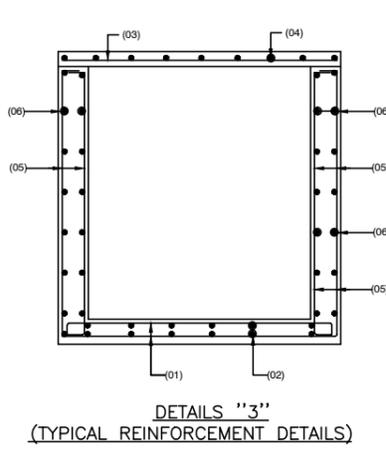
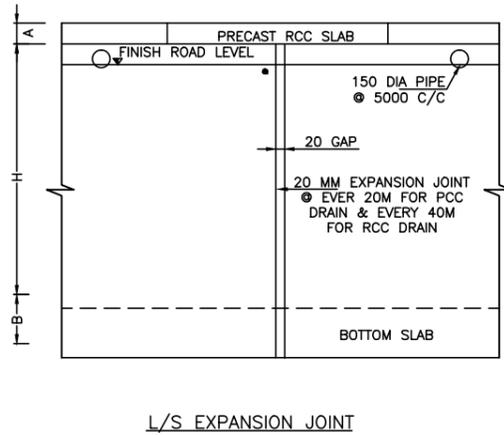
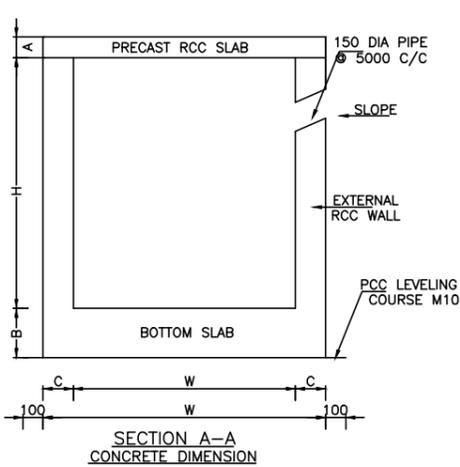
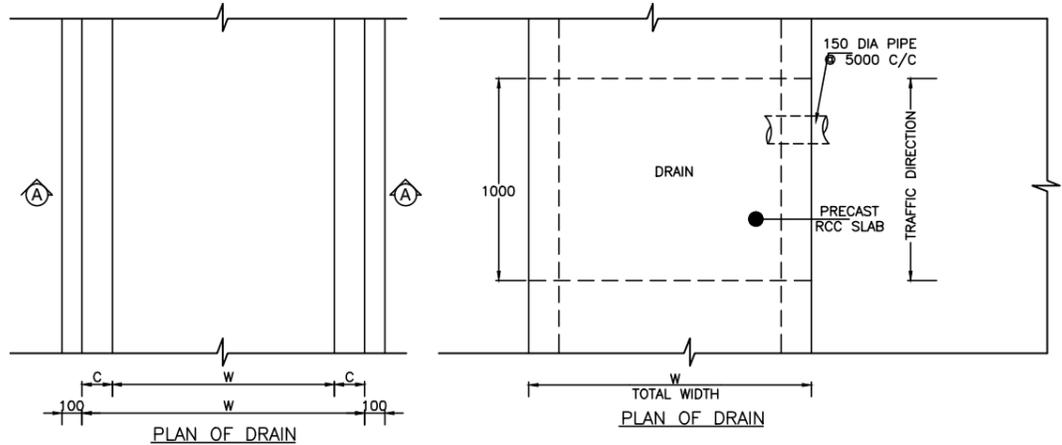
SATRA SERVICES AND SOLUTIONS PVT LTD.
#1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:

HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	MADHUBABU	TITLE : G.A.D FOR OVERHEAD GANTRY	REV. 0
DRAWN	DANIEL		SIZE : A3
CHECKED	CHANDRA/ASHIK		
APPROVED	PRADEEP KAPLA	DRAWING NO : HP/RAH-BHA/MISC/015	
ROAD NAME :		PACKAGE-IV	
UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.			SHEET 01 OF 01



SCHEDULE OF DRAIN WITHOUT WHEEL LOAD (M25 CONCRETE GRADE)

DRAIN SIZE						REINFORCEMENT DETAILS						REMARKS
DRAIN TOTAL WIDTH	CLEAR HEIGHT	DRAIN WIDTH	PRECAST SLAB THICKNESS	BOTTOM SLAB THICKNESS	EXTERNAL WALL THICKNESS	BOTTOM SLAB MAIN	BOTTOM SLAB DISTRIBUTION	PRECAST SLAB MAIN	PRECAST SLAB DISTRIBUTION	EXTERNAL WALL MAIN	EXTERNAL WALL DISTRIBUTION	
(H)	(W1)	(A)	(B)	(C)	(01)	(02)	(03)	(04)	(05)	(06)		
700	800	100	100	100	100	-	-	8T @ 200 C/C	8T @ 200	8T @ 200 C/C	8T @ 200 C/C	REIN. DETAIL "1"
900	800	100	100	100	100	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	REIN. DETAIL "2"
1250	740	100	140	130	130	8T @ 100 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	REIN. DETAIL "3"
1500	700	100	150	150	150	8T @ 110 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 110 C/C	8T @ 200 C/C	REIN. DETAIL "4"
1750	660	100	170	170	170	8T @ 140 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 140 C/C	8T @ 200 C/C	REIN. DETAIL "5"
1750	640	100	200	180	180	8T @ 130 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 130 C/C	8T @ 200 C/C	REIN. DETAIL "6"
2500	580	100	230	210	210	8T @ 110 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 110 C/C	8T @ 200 C/C	REIN. DETAIL "7"
2750	540	100	250	230	230	8T @ 100 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	REIN. DETAIL "8"
3000	540	100	250	230	230	8T @ 100 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	REIN. DETAIL "9"

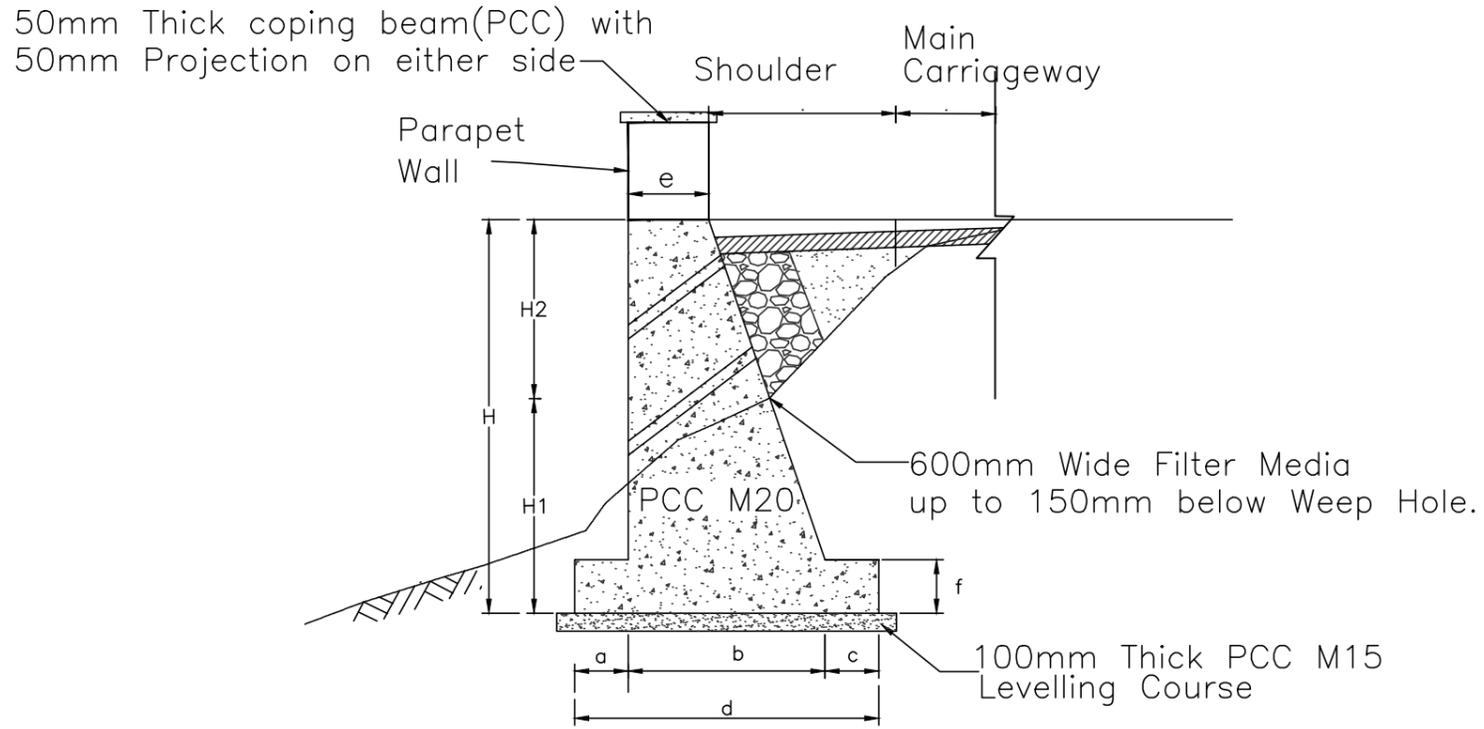
SCHEDULE OF DRAIN WITH WHEEL LOAD (M30 CONCRETE GRADE)

DRAIN SIZE						REINFORCEMENT DETAILS						REMARKS
DRAIN TOTAL WIDTH	CLEAR HEIGHT	DRAIN WIDTH	PRECAST SLAB THICKNESS	BOTTOM SLAB THICKNESS	EXTERNAL WALL THICKNESS	BOTTOM SLAB MAIN	BOTTOM SLAB DISTRIBUTION	PRECAST SLAB MAIN	PRECAST SLAB DISTRIBUTION	EXTERNAL WALL MAIN	EXTERNAL WALL DISTRIBUTION	
(H)	(W1)	(A)	(B)	(C)	(01)	(02)	(03)	(04)	(05)	(06)		
900	800	200	200	100	100	8T @ 200 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	REIN. DETAIL "4"
1250	700	200	200	150	150	8T @ 200 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 200 C/C	8T @ 200 C/C	REIN. DETAIL "5"
1500	680	200	200	160	160	8T @ 150 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 150 C/C	8T @ 200 C/C	REIN. DETAIL "5"
1750	640	200	200	180	180	8T @ 170 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 170 C/C	8T @ 200 C/C	REIN. DETAIL "5"
1750	600	200	200	200	200	8T @ 130 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 130 C/C	8T @ 200 C/C	REIN. DETAIL "5"
2500	560	200	200	220	220	8T @ 130 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 130 C/C	8T @ 200 C/C	REIN. DETAIL "5"
2750	500	200	240	250	250	8T @ 100 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	REIN. DETAIL "5"
3000	500	200	250	250	250	8T @ 100 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	8T @ 100 C/C	8T @ 200 C/C	REIN. DETAIL "5"

- NOTES:
- ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
 - CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH OF 25MPa.
 - THE DRAIN HAS BEEN DESIGNED FOR THE EARTH PRESSURE AND PEDESTRIAN LOADS OVER THE TOP SLAB.
 - ALL UNTENSIONED REINFORCEMENT SHALL BE GRADE DESIGNATION Fe-500 CONFORMING TO IS:1786 STANDARD.
 - CLEAR COVER TO REINFORCEMENT FOR DIFFERENT ELEMENTS SHALL BE AS FOLLOWS..
30mm FOR BOTTOM SLAB
30mm FOR EXTERNAL WALL
25mm FOR TOP SLAB
 - WEEPHOLES, DIAMETRE 100mm. SHALL BE PROVIDED AT SUITABLY STAGGERED SPACING NOT EXCEEDING 1M. IN BOTH DIRECTIONS STARTING AT 150mm FROM GROUND LEVEL / LOW WATER LEVEL.
 - NOT MORE THAN 50% OF THE REINFORCEMENT SHALL BE LAPPED AT ANY SECTION. LAP LENGTH OF THE REINFORCEMENT SHALL BE 119φ.
 - BACK FILLING SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX: 6 OF IRC:78-2000 HAVING PROPERTIES C=0, φ = 30°, δ = 20° & γd = 18 KN/Cum.

TENDER PURPOSE ONLY

<p>CLIENT:</p> <p>HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>					<p>CONSULTANT:</p> <p>SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in</p>					<p>PROJECT:</p> <p>HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p> <p>SCALE: NOT TO SCALE</p>					<p>DESIGNED: MADHUBABU</p> <p>DRAWN: DANIEL</p> <p>CHECKED: CHANDRA/ASHIK</p> <p>APPROVED: PRADEEP KAPLA</p> <p>ROAD NAME: UPGRADEATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>					<p>TITLE: DIMENSION AND REINFORCEMENT DETAILS OF LINED DRAIN</p> <p>DRAWING NO: HP/RAH-BHA/MISC/016</p> <p>PACKAGE-IV</p>					<p>REV. 0</p> <p>SIZE: A3</p> <p>SHEET 01 OF 01</p>				
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																							



TYPICAL TOE WALL DETAILS

DETAIL OF PCC TOE WALL

HEIGHT (H) (m)	DIMENSION DETAILS OF TOE WALL IN METERS								DESIGN SAFE BEARING CAPACITY (KN/m ²)
	a	b	c	d	e	f	H1	H2	
2.50	0.50	1.10	0.40	2.00	0.45	0.30	1.50	1.00	150
3.50	0.50	1.60	0.80	2.90	0.45	0.40	1.50	2.00	150
4.50	0.50	2.10	1.20	3.80	0.45	0.50	1.50	3.00	150

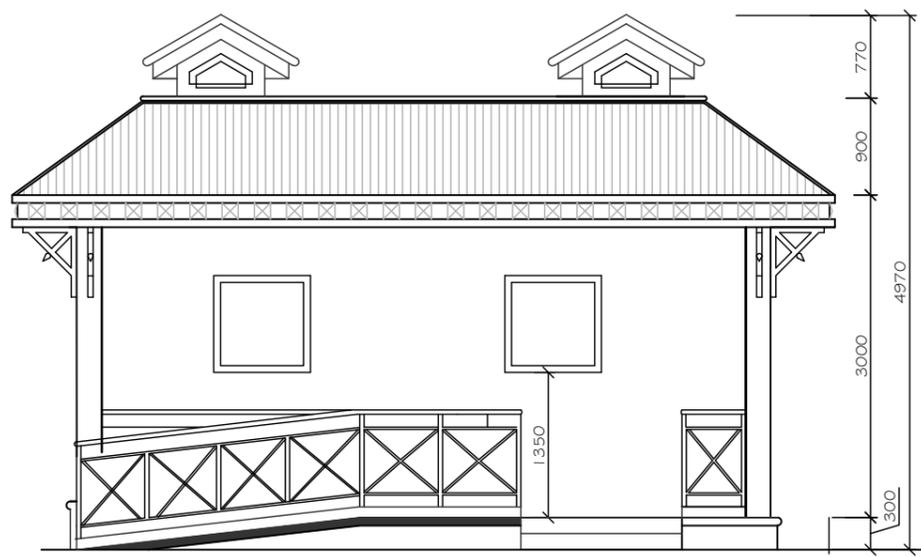
Toe Walls Schedule				
From	To	Length (m)	Ht	Side
250	320	70	2	RHS
680	730	50	1	RHS
1470	1660	190	2	RHS
2010	2050	40	2	RHS
Total Length = 350				

NOTES:-

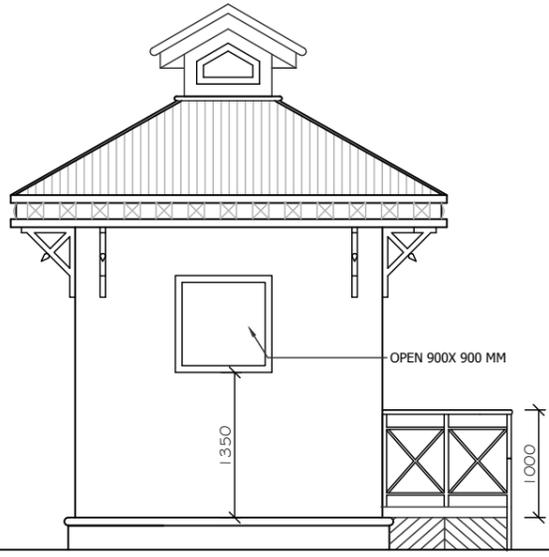
1. ALL DIMENSIONS ARE IN "MM" UNLESS OTHERWISE INDICATED.
2. THE LENGTH & HEIGHT INDICATED IS SUBJECT TO CHANGES AS PER THE SITE REQUIREMENT.
3. THE DRAWINGS PROPOSED ARE INDICATIVE, AND TO BE FINALISED BY THE CONTRACTOR IN CONSULTATION WITH CONSTRUCTION SUPERVISION CONSULTANCY/ HPRIDC AS PER SITE CONDITION.
4. WORKING CROSS SECTIONS SHALL BE PREPARED BY THE CONTRACTOR AS PER ORIGINAL GROUND LEVELS TAKEN AND HEIGHT OF WALL (H1 & H2) TO BE DECIDED ACCORDINGLY.
5. CONSTRUCTION JOINTS SHALL BE PROVIDED AT 10M INTERVALS.THE SBC SHALLE BE ENSURED BEFORE TAKING UP THE WORK.

TENDER PURPOSE ONLY

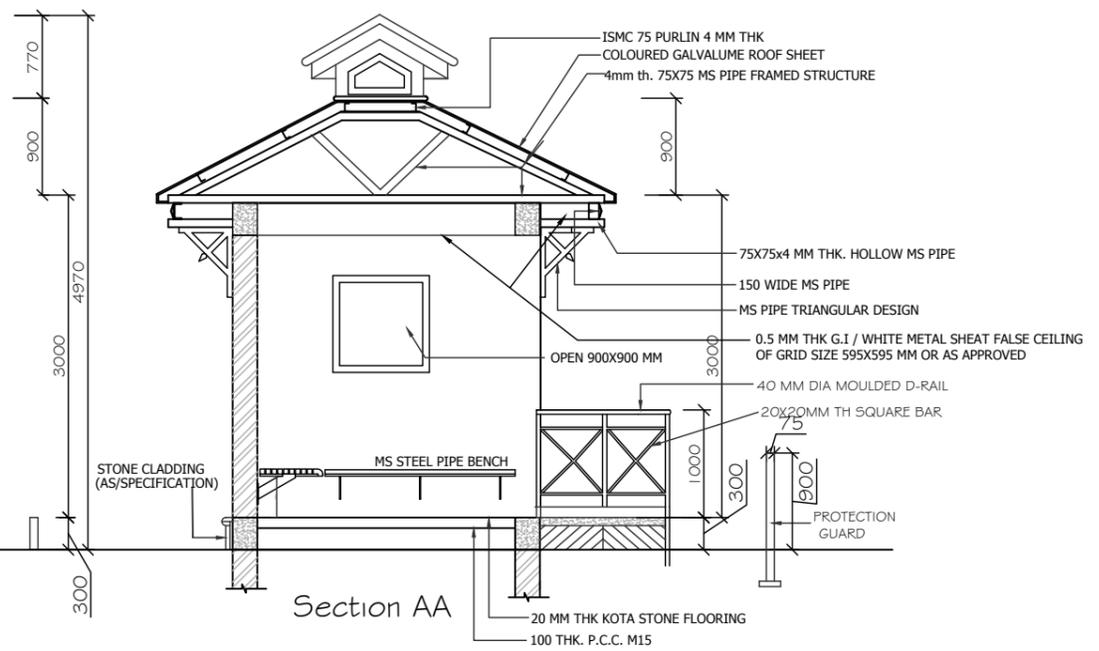
					CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana – 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED MADHUBABU DRAWN DANIEL CHECKED CHANDRA/ASHIK APPROVED PRADEEP KAPLA	TITLE : TYPICAL DETAIL OF TOE WALL DRAWING NO : HP/RAH-BHA/MISC/017	REV. 0 SIZE : A3
					ROAD NAME : PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.		SCALE: NOT TO SCALE		SHEET 01 OF 01	



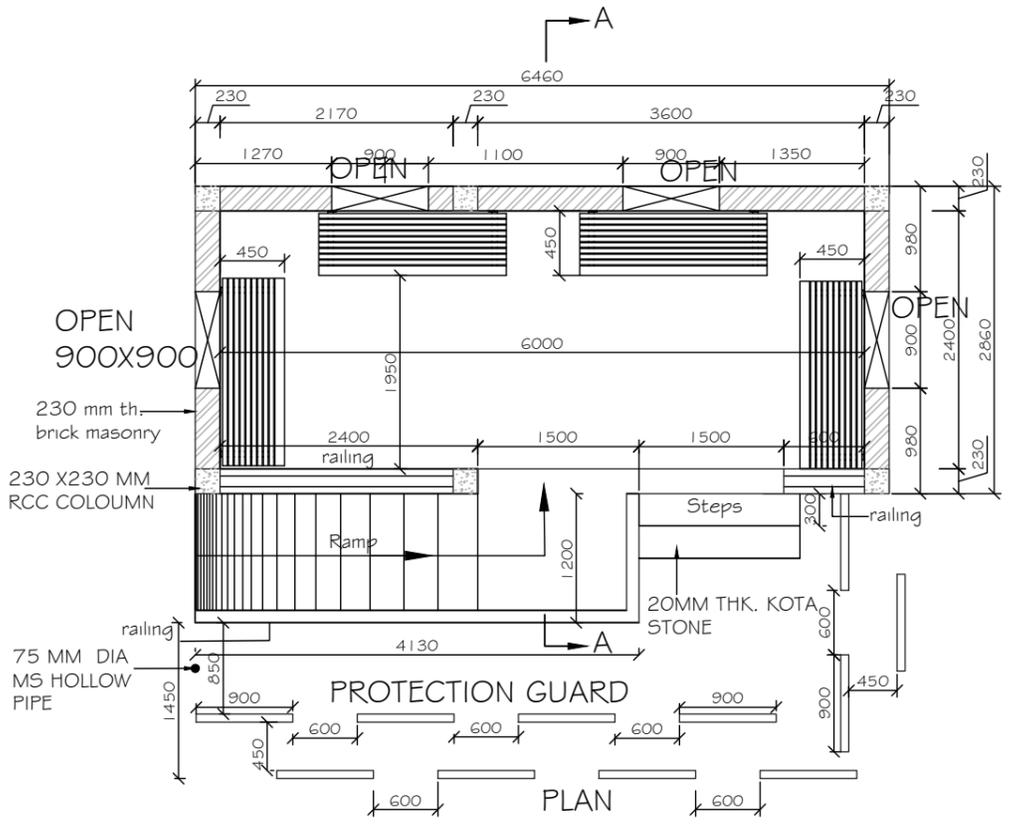
Front Elevation



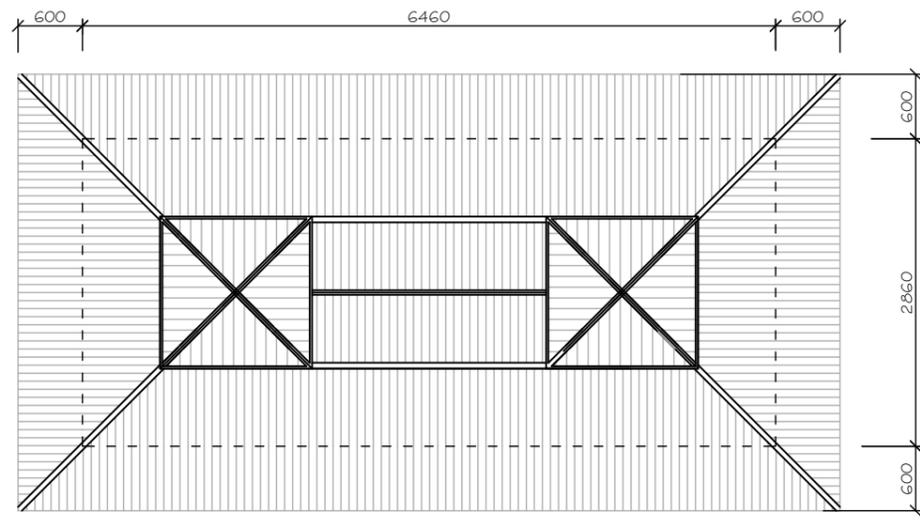
Side Elevation



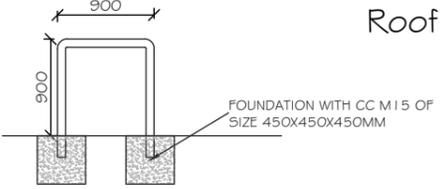
Section AA



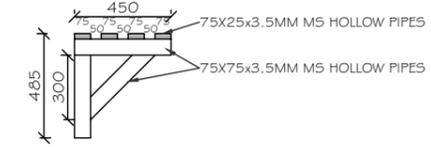
PLAN



Roof Plan



PROTECTION GUARD DETAIL



SEATING DETAIL

SPECIFICATIONS :-

- 1) ALL DIMENSIONS ARE IN MM
- 2) P.C.G. GRADE M15
- 3) RCC CONCRETE GRADE M25
- 4) BRICK WORK IN SUPERSTRUCTURE IN MORTAR 1:6, (CEMENT : 6 COARSE SAND)
- 5) BRICK WORK IN FOUNDATION IN MORTAR 1:4, (CEMENT : 4 COARSE SAND)
- 6) STONE MASONRY IN BASEMENT IN MORTAR 1:6, (CEMENT : 6 COARSE SAND)
- 7) INTERNAL & EXTERNAL PLASTER (15 TO 20MM THK.) IN CEMENT MORTAR (CEMENT : 4 COARSE SAND)
- 8) ROOFING SHEET SHALL BE 0.5MM THK GALVALUME COLOURED ROOF SHEETS
- 9) PAINTING INTERNAL & EXTERNAL WATER PROOF CEMENT COLOUR PAINT.
- 10) ALL STEEL MEMBER WITH ONE COAT ZINC PRIMER & 2 COAT ENAMEL PAINT.

Schedule for Bus Shelter

S.no	Chainage	Type of Shelter
1	1+450	Rain Shelter & Bus Stop
2	2+750	Rain Shelter & Bus Stop

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

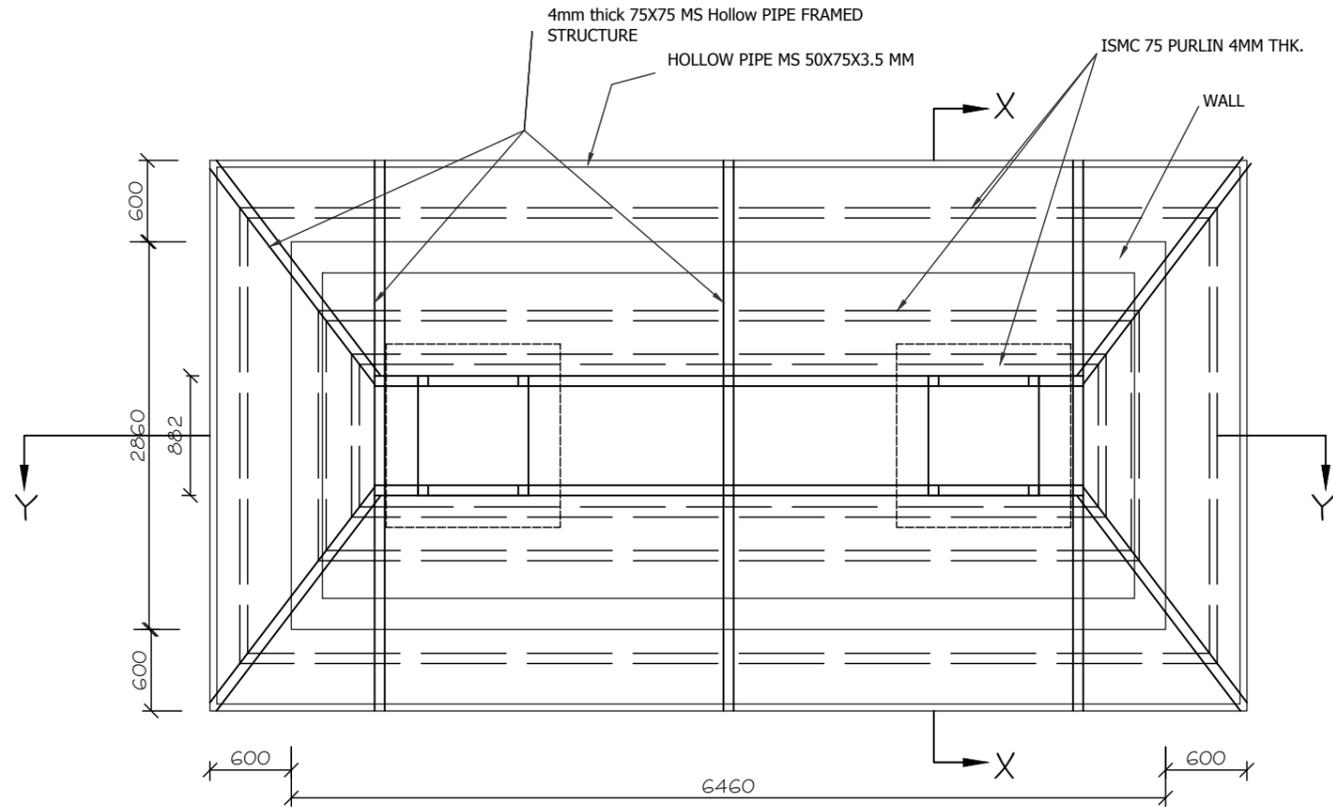
 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

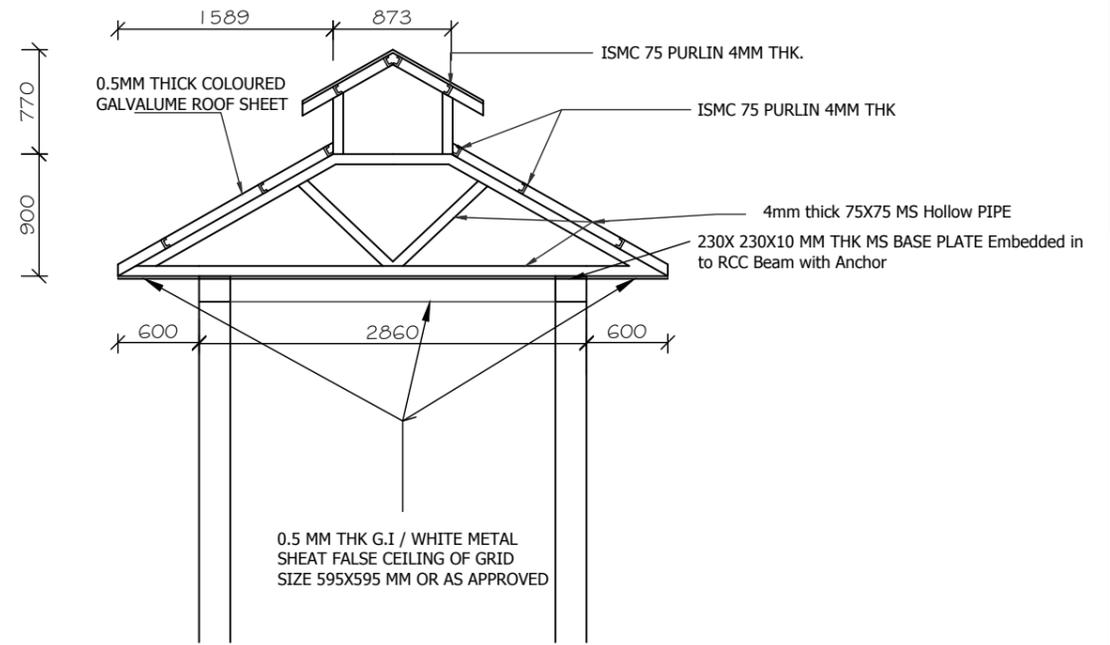
 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
 SCALE: NOT TO SCALE

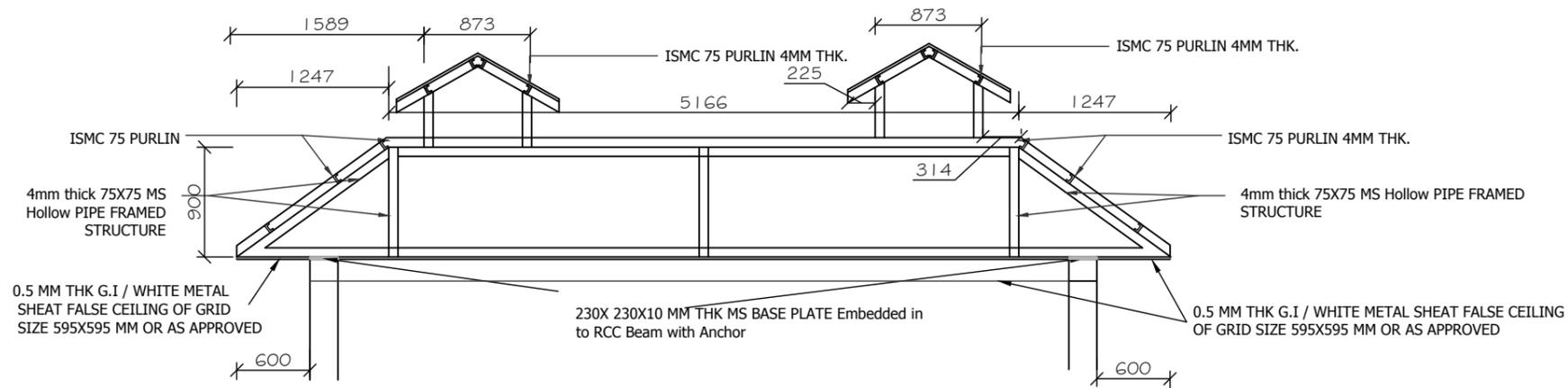
DESIGNED: MADHUBABU
DRAWN: DANIEL
CHECKED: CHANDRA/ASHIK
APPROVED: PRADEEP KAPLA
ROAD NAME: UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.
TITLE: TYPICAL LAYOUT FOR BUS SHELTER
DRAWING NO: HP/RAH-BHA/MISC/018A
 Package-IV:
 SHEET 01 of 03



ROOF PLAN



SECTION AT X-X



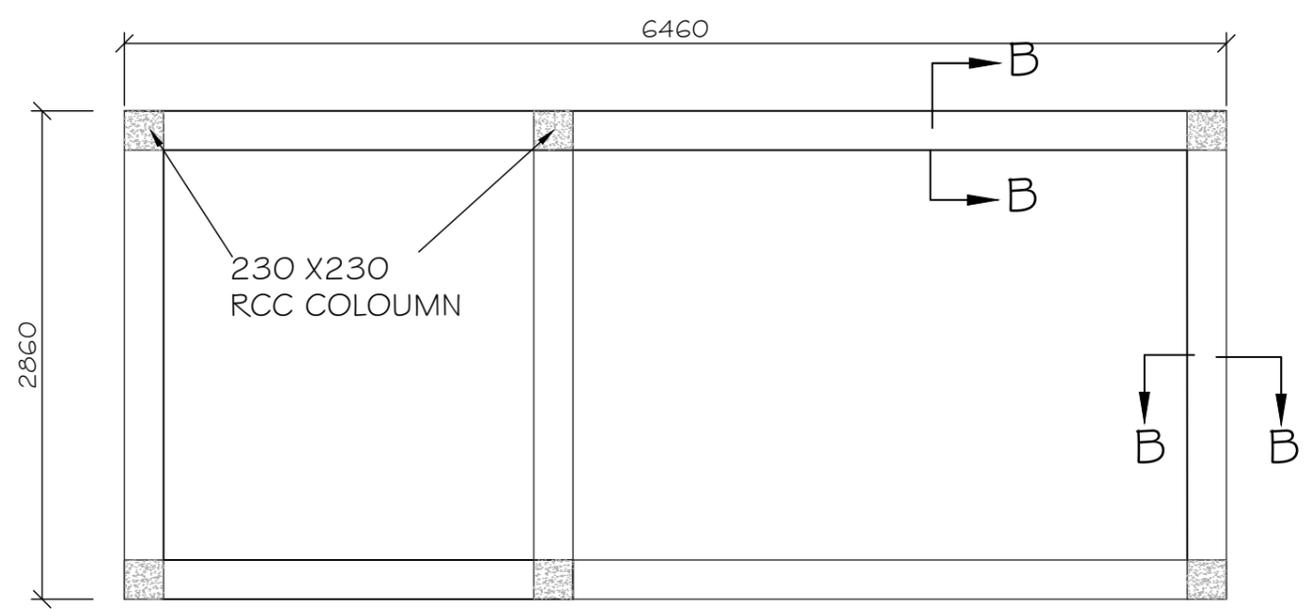
SECTION AT Y-Y

SPECIFICATIONS :-

- 1) ALL DIMENSIONS ARE IN MM
- 2) P.C.C. GRADE M15
- 3) RCC CONCRETE GRADE M25
- 4) BRICK WORK IN SUPERSTRUCTURE IN MORTAR 1:6, (1CEMENT : 6 COARSE SAND)
- 5) BRICK WORK IN FONDATION IN MORTAR 1:4, (1CEMENT : 4 COARSE SAND)
- 6) STONE MASONRY IN BASEMENT IN MORTAR 1:6, (1CEMENT : 6 COARSE SAND)
- 7) INTERNAL & EXTERNAL PLASTER (15 TO 20MM THK.) IN CEMENT MORTAR (1CEMENT : 4 COARSE SAND)
- 8) ROOFING SHEET SHALL BE 0.5MM THK GALVALUME COLOURED ROOF SHEETS
- 9) PAINTING INTERNAL & EXTERNAL WATER PROOF CEMENT COLOUR PAINT.
- 10) ALL STEEL MEMBER WITH ONE COAT ZINC PRIMER & 2 COAT ENAMEL PAINT.

TENDER PURPOSE ONLY

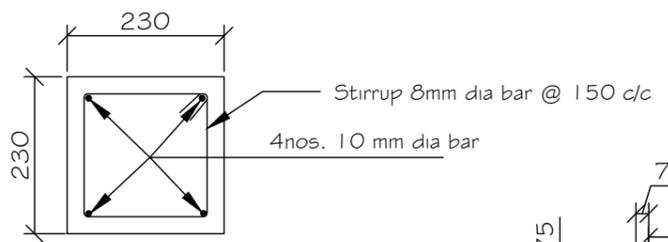
	<p>CLIENT:</p>  <p>HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>	<p>CONSULTANT:</p>  <p>SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in</p>	<p>PROJECT:</p> <p>HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p> <p>SCALE: NOT TO SCALE</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DESIGNED</td> <td>MADHUBABU</td> </tr> <tr> <td>DRAWN</td> <td>DANIEL</td> </tr> <tr> <td>CHECKED</td> <td>CHANDRA/ASHIK</td> </tr> <tr> <td>APPROVED</td> <td>PRADEEP KAPLA</td> </tr> </table>	DESIGNED	MADHUBABU	DRAWN	DANIEL	CHECKED	CHANDRA/ASHIK	APPROVED	PRADEEP KAPLA	<p>TITLE :</p> <p>TYPICAL LAYOUT FOR BUS SHELTER</p> <p>DRAWING NO : HP/RAH-BHA/MISC/018B</p> <p>Package-IV: UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>REV.</td> <td>0</td> </tr> <tr> <td>SIZE :</td> <td>A3</td> </tr> <tr> <td>SHEET</td> <td>02 of 03</td> </tr> </table>	REV.	0	SIZE :	A3	SHEET	02 of 03
DESIGNED	MADHUBABU																			
DRAWN	DANIEL																			
CHECKED	CHANDRA/ASHIK																			
APPROVED	PRADEEP KAPLA																			
REV.	0																			
SIZE :	A3																			
SHEET	02 of 03																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED													
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED														



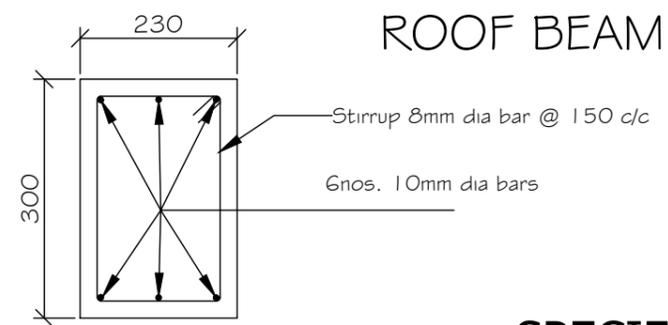
PLINTH BEAM PLAN



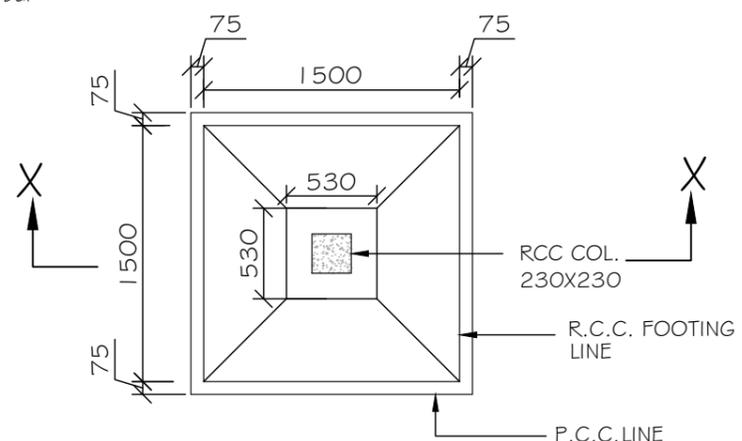
ROOF BEAM PLAN



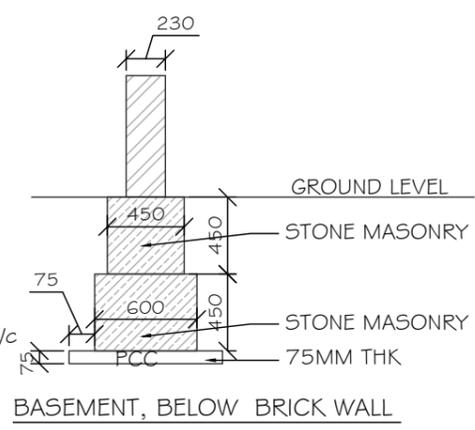
SECTION AT B-B



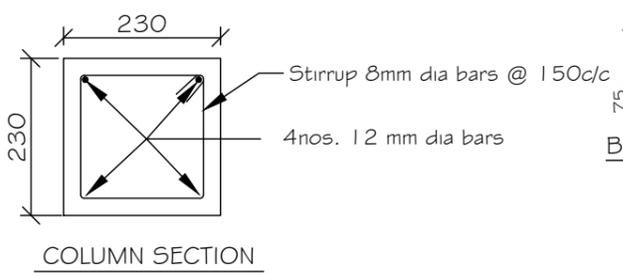
SECTION AT C-C



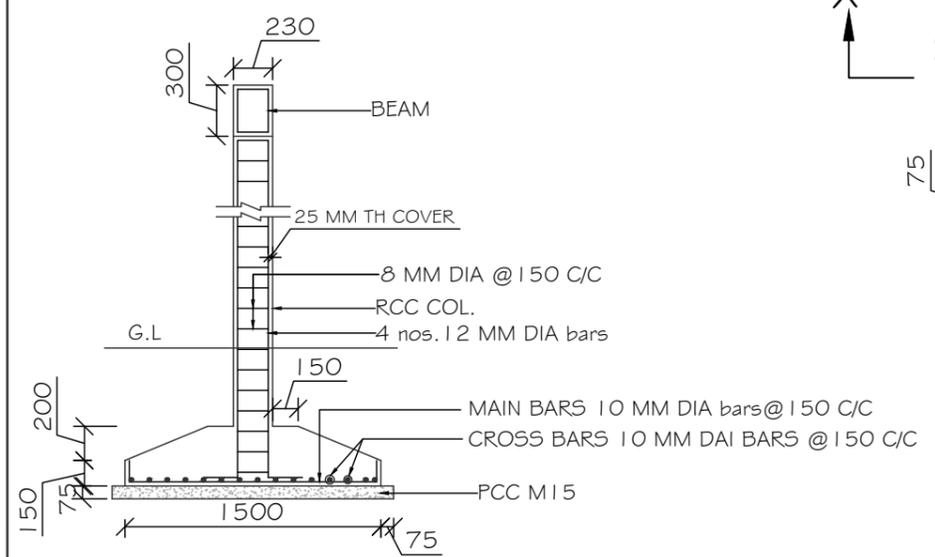
FOOTING PLAN



BASEMENT, BELOW BRICK WALL



COLUMN SECTION



SECTION XX

SPECIFICATIONS :-

- 1) ALL DIMENSIONS ARE IN MM
- 2) P.C.C. GRADE M15
- 3) RCC CONCRETE GRADE M25
- 4) BRICK WORK IN SUPERSTRUCTURE IN MORTAR 1:6, (1CEMENT : 6 COARSE SAND)
- 5) BRICK WORK IN FONDATION IN MORTAR 1:4, (1CEMENT : 4 COARSE SAND)
- 6) STONE MASONRY IN BASEMENT IN MORTAR 1:6, (1CEMENT : 6 COARSE SAND)
- 7) INTERNAL & EXTERNAL PLASTER (15 TO 20MM THK.) IN CEMENT MORTAR (1CEMENT : 4 COARSE SAND)
- 8) ROOFING SHEET SHALL BE 0.5MM THK GALVALUME COLOURED ROOF SHEETS .
- 9) PAINTING INTERNAL & EXTERNAL WATER PROOF CEMENT COLOUR PAINT.
- 10) ALL STEEL MEMBER WITH ONE COAT ZINC PRIMER & 2 COAT ENAMEL PAINT.

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

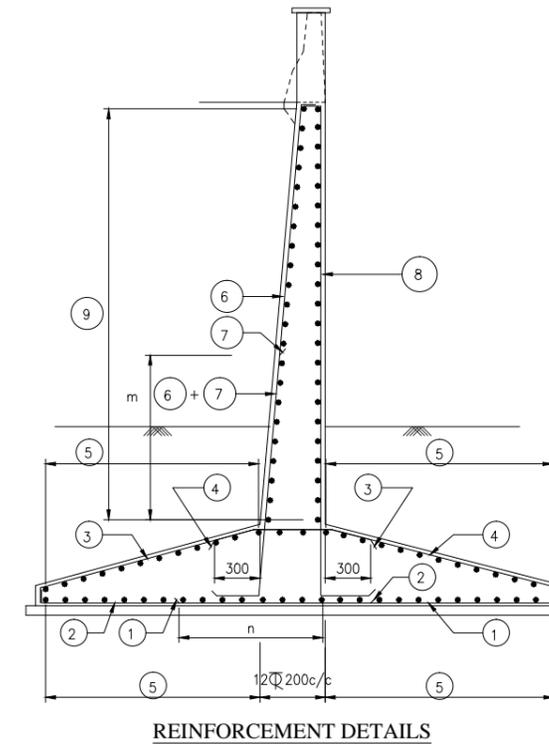
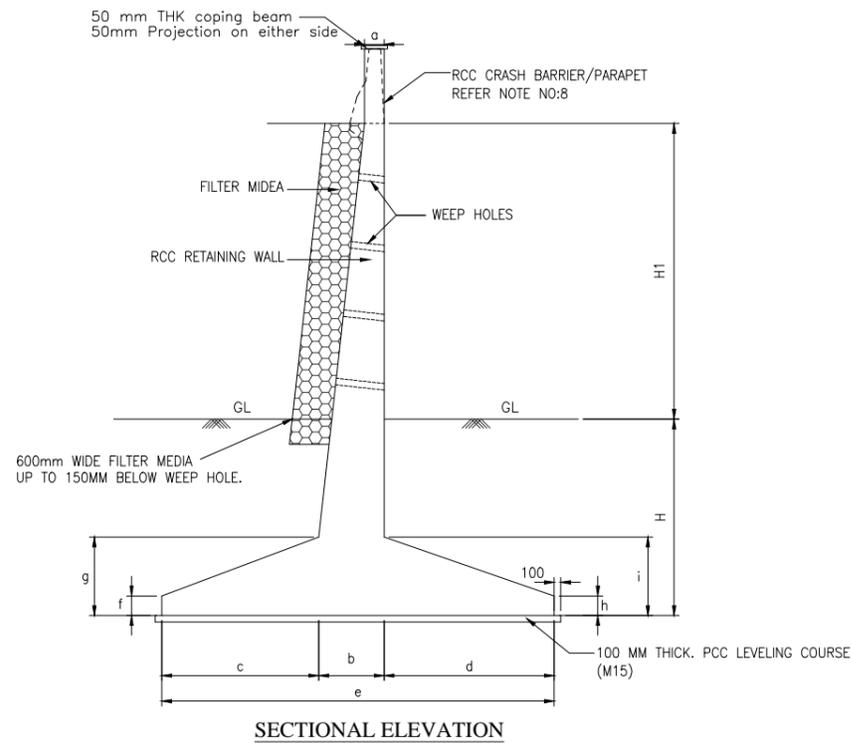
 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
 SCALE: NOT TO SCALE

DESIGNED	MADHUBABU	TITLE :	REV. 0
DRAWN	DANIEL	TYPICAL LAYOUT FOR BUS SHELTER	SIZE : A3
CHECKED	CHANDRA/ASHIK	DRAWING NO : HP/RAH-BHA/MISC/018C	
APPROVED	PRADEEP KAPLA	ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	SHEET 03 Of 03



DIMENSION DETAILS OF RETAINING WALL												DESIGN SBC KN/m ²
S.No	H	H1	a	b	c	d	e	f	g	h	i	
1	2000	2000	300	400	1750	1300	3450	300	600	300	600	150
2	2000	3000	300	400	2000	1600	4000	300	700	300	700	170
3	2000	4000	300	500	2300	2000	4800	300	800	300	800	200
4	2000	5000	300	600	2600	2200	5400	300	1000	300	1000	250
5	2000	6000	300	800	3000	2800	6600	300	1200	300	1200	250

SCHEDULE OF REINFORCEMENT

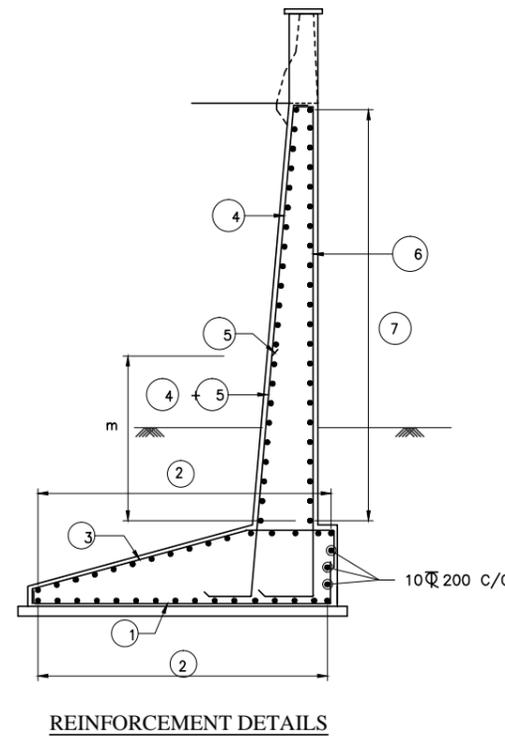
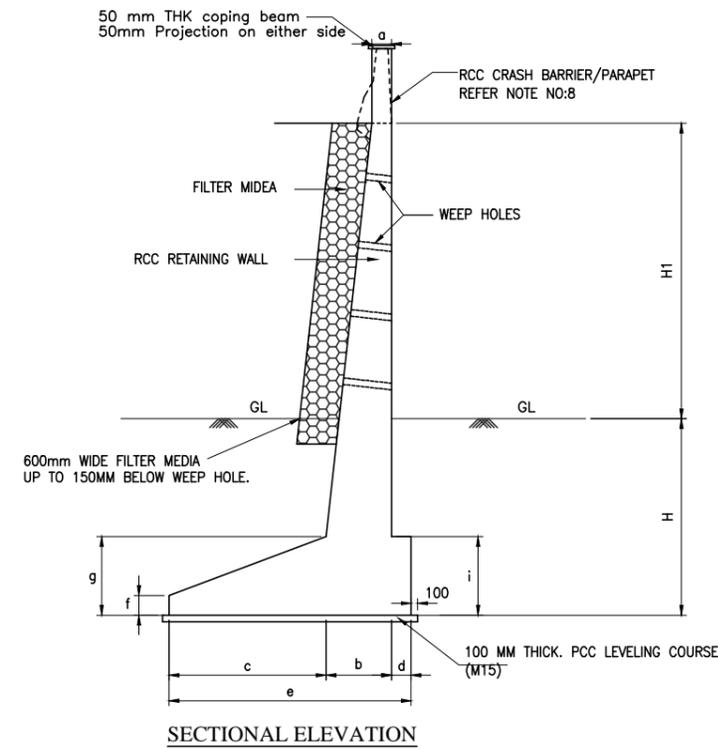
Height (H1) Bar Mark	Shape of bars	2000	3000	4000	5000	6000
		Bar Dia & Spacing				
1		12 φ150 C/C	12 φ130 C/C	16 φ160 C/C	16 φ140 C/C	16 φ100 C/C
2		10 φ150 C/C	10 φ130 C/C	10 φ160 C/C	10 φ140 C/C	10 φ110 C/C
3		12 φ150 C/C	12 φ130 C/C	12 φ110 C/C	16 φ150 C/C	16 φ120 C/C
4		10 φ150 C/C	10 φ130 C/C	10 φ110 C/C	10 φ150 C/C	10 φ120 C/C
5		10 φ200 C/C	10 φ200 C/C	10 φ200 C/C	10 φ160 C/C	10 φ120 C/C
6		12 φ200 C/C	16 φ200 C/C	20 φ200 C/C	20 φ200 C/C	20 φ170 C/C
7		12 φ200 C/C	16 φ200 C/C	16 φ200 C/C	20 φ200 C/C	16 φ170 C/C
8		12 φ200 C/C	12 φ200 C/C	12 φ200 C/C	12 φ200 C/C	12 φ170 C/C
9		10 φ200 C/C	10 φ150 C/C	10 φ120 C/C	10 φ100 C/C	10 φ100 C/C
m		2000	2750	3500	4250	4500
n		900	1300	1200	2000	2300

NOTE

- ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION SHALL IS TO BE SCALED.
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH AS FOLLOWS.
 - RCC RETAINING WALL - M30
 - RCC PARAPET - M30
 - RCC CRASH BARRIER - M40
- ALL UNTENSIONED REINFORCEMENT SHALL BE TMT BARS WITH GRADE DESIGNATION S-500 HAVING A YIELD STRENGTH OF Fe:500 MPa CONFORMING TO IS:1786 STANDARD.
- BACK FILLING BEHIND WALLS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX-6 OF IRC:78-2000 HAVING PROPERTIES C=0, φ = 30° AND d = 20KN/m³
- NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY LOCATION. LAP LENGTH SHALL BE 56 X DIA OF BAR.
- WEEPHOLES, DIAMETRE 100mm. SHALL BE PROVIDED AT SUITABLY STAGGERED SPACING NOT EXCEEDING 1M. IN BOTH DIRECTIONS.
- THE COVER TO OUTERMOST REINFORCEMENT IN RETAINING WALL AND FOOTING SHALL BE 40 AND 75mm RESPECTIVELY.
- REINFORCEMENT OF RCC CRASH BARRIER/PARAPET SHALL BE ANCHORED IN RETAINING WALL BEFORE CASTING THE SAME. FOR DETAILS REFER CRASH BARRIER/PARAPET RELATED DRAWINGS.
- 600mm THICK FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC:78-2000.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ALL GENERAL ARRANGEMENT DRAWINGS OF RESPECTIVE STRUCTURE.
- SBC (KN/M²) CONSIDERED IN THE DESIGN IS MENTIONED IN THE TABLE. AT CULVERT LOCATIONS THIS SHALL BE ENSURED BEFORE LAYING THE FOUNDATION CONCRETE AS DIRECTED BY ENGINEER-IN-CHARGE.
- FOR INTERMEDIATE HEIGHTS, THE DETAILS OF NEXT HIGHER HEIGHT SHALL BE USED.

TENDER PURPOSE ONLY

CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.					CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in					PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)					DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CS/AS APPROVED: PRADEEP KAPLA		TITLE : DIMENSION AND REINFORCEMENT DETAILS OF RCC RETAINING WALL (TYPE-I)		
ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.										PACKAGE-IV:		DRAWING NO : HP/RAH-BHA/MISC/019A							
SCALE: NOT TO SCALE										SHEET 01 OF 02									
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED													



Retaining wall Schedule			
S.No	Design Ch (km)		Side
	From	To	
01	2+375	2+425	RHS

DIMENSION DETAILS OF RETAINING WALL											DESIGN SBC KN/m ²
S.No	H	H1	a	b	c	d	e	f	g	i	
1	2000	1000	300	400	2700	300	3400	200	400	400	180
2	2000	2000	300	500	3800	300	4600	300	600	600	180
3	2000	3000	300	700	4800	300	5800	300	700	700	220
4	2000	4000	300	900	5800	300	7000	300	1200	1200	250
5	2000	5000	300	900	6000	300	7200	500	1500	1500	300
6	2000	6000	300	1200	6000	750	7950	500	1800	1800	300
7	2000	7000	300	1200	6500	800	8500	500	1800	1800	350

SCHEDULE OF REINFORCEMENT

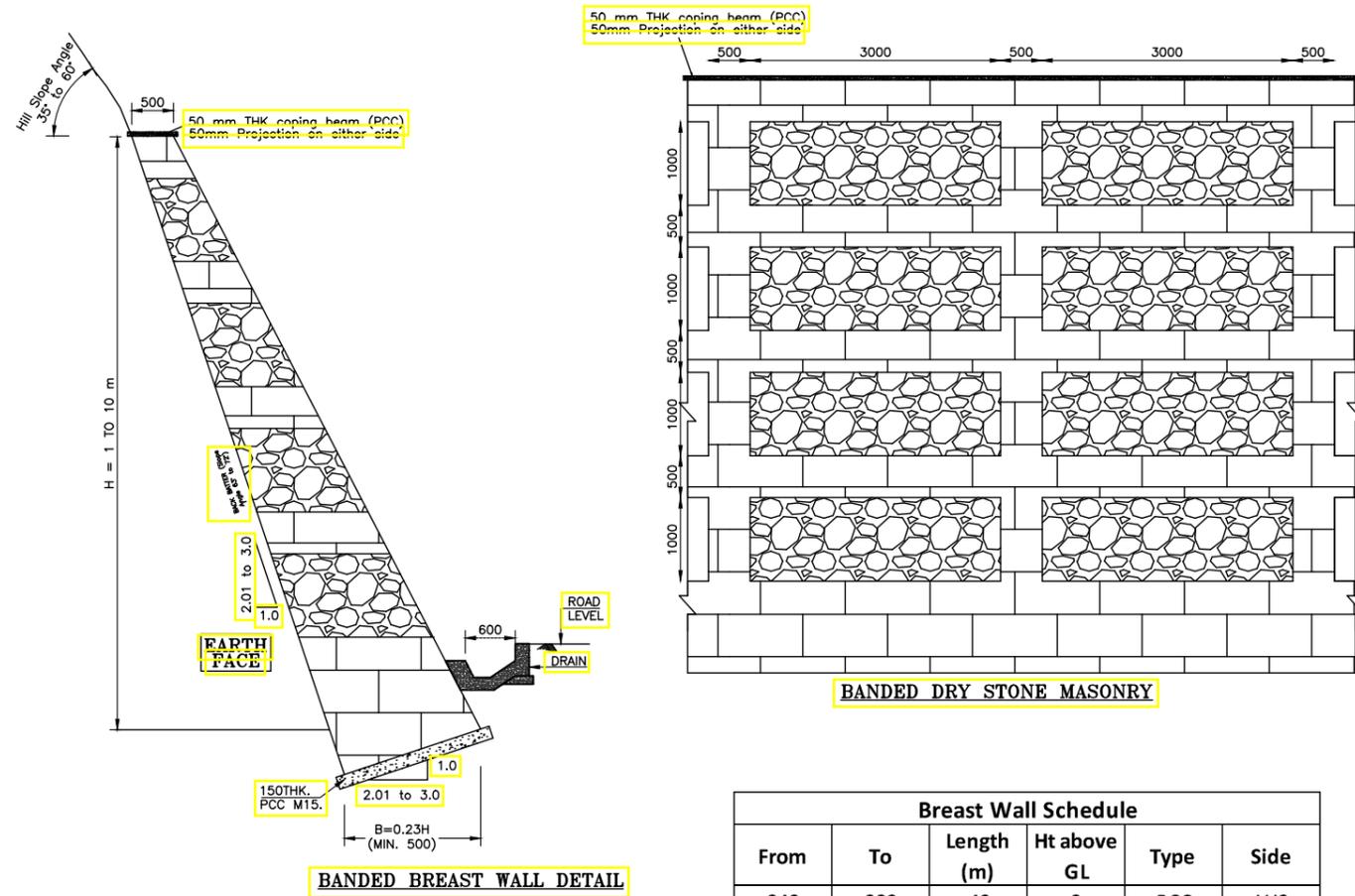
Height (H1) Bar Mark	Shape of bars	1000	2000	3000	4000	5000	6000	7000
		Bar Dia & Spacing						
1		10Φ 150 C/C	12Φ 120 C/C	16Φ 200 C/C	16Φ 120 C/C	20Φ 130 C/C	20Φ 100 C/C	20Φ 100 C/C
2		10Φ 200 C/C	10Φ 200 C/C	10Φ 110 C/C	12Φ 100 C/C	12Φ 100 C/C	12Φ 100 C/C	16Φ 100 C/C
3		12Φ 150 C/C	16Φ 150 C/C	20Φ 100 C/C	25Φ 120 C/C	25Φ 100 C/C	25Φ 110 C/C	32Φ 120 C/C
4		12Φ 200 C/C	12Φ 200 C/C	12Φ 200 C/C	12Φ 180 C/C	12Φ 180 C/C	12Φ 200 C/C	12Φ 200 C/C
5		-	12Φ 200 C/C	12Φ 200 C/C	12Φ 180 C/C	12Φ 180 C/C	16Φ 200 C/C	20Φ 200 C/C
6		10Φ 200 C/C	10Φ 200 C/C	10Φ 200 C/C	10Φ 150 C/C	10Φ 150 C/C	12Φ 150 C/C	12Φ 150 C/C
7		10Φ 200 C/C	10Φ 250 C/C	10Φ 200 C/C	10Φ 150 C/C	10Φ 150 C/C	10Φ 150 C/C	12Φ 150 C/C
m		-	1400	1800	1800	2000	2700	4200

NOTE

- ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION SHALL IS TO BE SCALED.
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH AS FOLLOWS.
 - RCC RETAINING WALL - M30
 - RCC PARAPET - M30
 - RCC CRASH BARRIER - M40
- ALL UNTENSIONED REINFORCEMENT SHALL BE TMT BARS WITH GRADE DESIGNATION S-500 HAVING A YIELD STRENGTH OF Fe:500 MPa CONFORMING TO IS:1786 STANDARD.
- BACK FILLING BEHIND WALLS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX-6 OF IRC:78-2000 HAVING PROPERTIES $C=0$, $\phi = 30^\circ$ AND $d = 20KN/m^3$
- NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY LOCATION. LAP LENGTH SHALL BE 56 X DIA OF BAR.
- WEEPHOLES, DIAMETRE 100mm. SHALL BE PROVIDED AT SUITABLY STAGGERED SPACING NOT EXCEEDING 1M. IN BOTH DIRECTIONS.
- THE COVER TO OUTERMOST REINFORCEMENT IN RETAINING WALL AND FOOTING SHALL BE 40 AND 75mm RESPECTIVELY.
- REINFORCEMENT OF RCC CRASH BARRIER/PARAPET SHALL BE ANCHORED IN RETAINING WALL BEFORE CASTING THE SAME. FOR DETAILS REFER CRASH BARRIER/PARAPET RELATED DRAWINGS.
- 600mm THICK FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC:78-2000.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ALL GENERAL ARRANGEMENT DRAWINGS OF RESPECTIVE STRUCTURE.
- SBC (KN/M²) CONSIDERED IN THE DESIGN IS MENTIONED IN THE TABLE. AT CULVERT LOCATIONS THIS SHALL BE ENSURED BEFORE LAYING THE FOUNDATION CONCRETE AS DIRECTED BY ENGINEER-IN-CHARGE.
- FOR INTERMEDIATE HEIGHTS, THE DETAILS OF NEXT HIGHER HEIGHT SHALL BE USED.

TENDER PURPOSE ONLY

CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.					CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in					PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)					DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CS/AS APPROVED: PRADEEP KAPLA		TITLE: DIMENSION AND REINFORCEMENT DETAILS OF RCC RETAINING WALL (TYPE-II) DRAWING NO: HP/RAH-BHA/MISC/019B				
ROAD NAME: UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.					SCALE: NOT TO SCALE					PACKAGE-IV:					SHEET 02 OF 02						
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED															



NOTES:-

1. ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METRES, UNLESS SPECIFIED OTHERWISE.
2. CURING OF MASONRY WALLS IS GENERALLY NOT FEASIBLE IN HILLS DUE TO PAUCITY OF WATER, HOWEVER, ALL EFFORTS SHALL BE MADE TO CURE FOR 03 DAYS.
3. THIS DESIGN IS APPLICABLE WHERE GOOD FOUNDATION CONDITIONS (COMPACTED EARTH / ROCK ETC IS AVAILABLE) AND WITH WELL-DRAINED BACKFILL WITH GRANULAR MATERIAL. WHERE WELL-DRAINED BACKFILL IS NOT POSSIBLE, FILTER MEDIA OR GEOCOMPOSITE MEMBRANE SHALL BE PROVIDED AS PER MORTH SPECIFICATIONS. FILTER MEDIA OR GEOCOMPOSITE MEMBRANE IS NOT REQUIRED IF ROCK IS ENCOUNTERED.
4. WHERE EVER REQUIRED OTHER MEASURES LIKE CHECK DRAINS, TURFING, BENCHING OF CUT SLOPES IN SOFT ROCKS, SEALING OF CRACKS, ETC.ARE TO BE ADOPTED AS PRE OTHER DRAWINGS AND DETAILS.
5. FOR CEMENT (STONE) MASONRY BREAST WALLS, WEEP HOLES SHALL BE 80MM WIDE AND 150MM HEIGHT OR CIRCULAR OF 150MM DIA AT SPACING NOT EXCEEDING 1.0M IN HORIZONTAL AND VERTICAL DIRECTION AS PER CL. 403.11.6 OF IRC 40-1995.
6. FOR DRY STONE MASONRY BREAST WALLS, THE WEEP HOLES SHALL BE 15x15 CM AT 1.5-2m c/c (HORIZONTALLY & VERTICALLY) AND GRADE 1:10
7. BREAST WALL CAN BE CONSTRUCTED IN STAGES IN HEIGHT RANGING FROM 500mm TO 1000mm FOR EACH STAGE DEPENDING UPON THE SITE CONDITIONS ENSURE PROPER BACK FILLING FOR PRECEDING STAGE BEFORE TAKING UP CONSTRUCTION OF NEXT STAGE.
10. IN PLUM CONCRETE SECTION HILL SIDE SHUTTERING, MAY BE OMITTED AS IT WILL INSURE THAT THE CONCRETE FLOWS INTO GAPS (IF ANY).
11. CONSTRUCTION JOINT AT EVERY 10.5 M INTERVAL.
12. THE LENGTHS AND HEIGHTS SHOWN ARE INDICATIVE. THE CONTRACTOR SHALL ASCERTAIN THE SAME IN CONSULTATION WITH CSC/HPRDC AS PER SITE CONDITIONS.

PLUM CONCRETE SPECIFICATIONS

1. **SIZE:** THE SIZE OF STONE PLUMS MAY BE FROM 160 MM AND ABOVE UP TO ANY REASONABLE SIZE. PLUMS 160 MM AND ABOVE RESTRICTED TO A MAXIMUM LIMIT OF 20 PERCENT BY VOLUME OF CONCRETE. THE MAXIMUM DIMENSION OF THESE STONES OR PLUMS SHALL NOT EXCEED 1/3 RD THE LEAST DIMENSION OF THE MEMBER.
2. **MATERIAL:** ALL PLUMS SHALL BE HARD, DURABLE CLEN AND FREE FROM SOFT MATERIALS OR LOOSE PIECES OR DELETERIOUS SUBSTANCE IN THEM & SHALL NOT HAVE SHARP CORNERS.
3. **CONSTRUCTION OPERATIONS:** DURING CONCRETING THE FIRST LAYER OF CONCRETE OF THE SPECIFIED MIX SHALL BE LAID TO THE PLUMS SHALL THEN BE LAID WHILE THE TOP PORTION OF THIS CONCRETE IS STILL GREEN BUT SUFFICIENTLY STIFF TO PREVENT COMPLETE SUBMERGENCE OF THE PLUM UNDER THEIR OWN WEIGHT. THESE PLUMS SHALL BE ABOUT HALF EMBEDDED IN THE CONCRETE & THE REMAINING PART EXPOSED SO AS TO FORM A KEA WITH THE NEXT LAYER OF THE CONCRETE NO PLUM SHALL BE USED FOR CONCRETE LAND UNDER WATER.
4. WHILE PLACING THE PLUMS, CARE SHALL BE TAKEN TO SEE THAT THE CLEAR DISTANCE BETWEEN ANY TWO PLUMS IS NOT LESS THAN EITHER THE WIDTH OR THICKNESS OF EITHER OF THE PLUMS. THE DISTANCE FROM THE PLUMS TO THE OUTER SURFACE FROM ANY STEEL REINFORCEMENT SHALL BE EQUAL TO GRETEST WIDTH OF PLUMS. IF PLUMS OF STRATIFIED STONE ARE USED THEY SHALL BE LAID ON THEIR NATURAL BED. STONES WITH CONCAVE FACES SHALL AND SUCCESSIVE LAYERS OF CONCRETE SHALL BE AT LEAST TWICE THAT OF THE LARGEST PLUM.
5. **QUANTITY OF PLUM:** THE TOTAL VOLUME OF PLUMS SHALL NOT EXCEED 20% OF THE VOLUME OF THE FINISHED CONCRETE.
6. **MIX OF PLUM:** PLUM CONCRETE 1:2:4 (1 CEMENT :2 SAND : 4 GRADED STONE AGGREGATE 40MM NOMINAL SIZE) WITH 50% PLUMS.

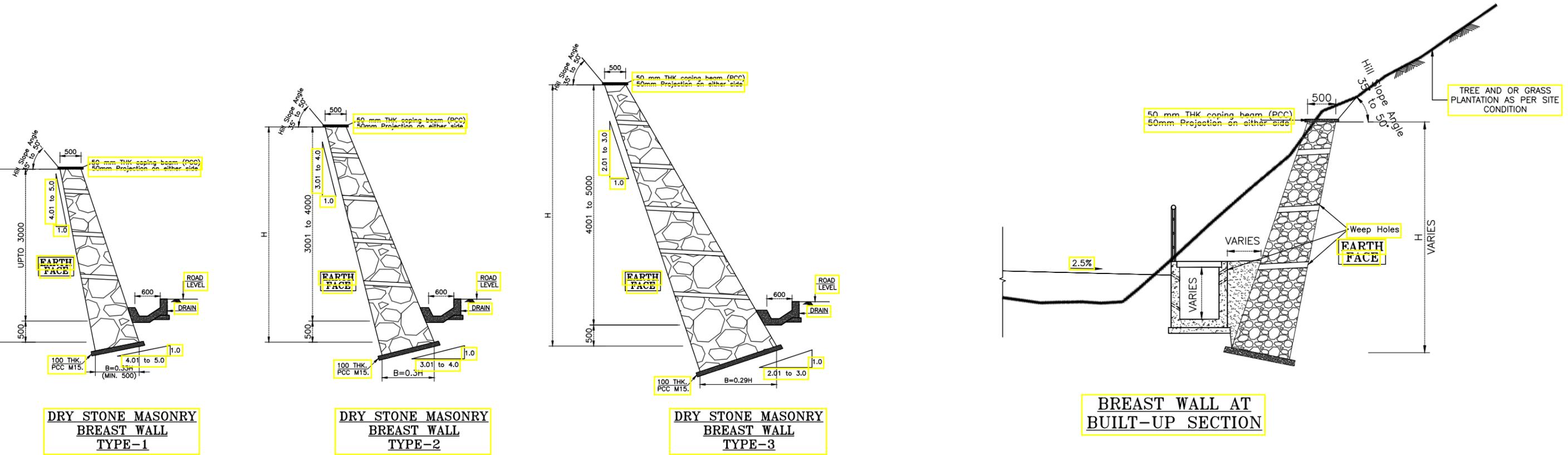
BREAST WALL SCHEDULE

Breast Wall Schedule					
From	To	Length (m)	Ht above GL	Type	Side
340	380	40	3	PCC	LHS
440	480	40	2	PCC	LHS
480	560	80	2	PCC	LHS
560	580	20	2	PCC	LHS
640	660	20	4	PCC	LHS
660	770	110	4	PCC	LHS
770	840	70	4	PCC	LHS
840	850	10	4	PCC	LHS
850	870	20	4	PCC	LHS
870	900	30	4	PCC	LHS
1050	1070	20	4	PCC	LHS
1100	1120	20	4	PCC	LHS
1120	1170	50	4	PCC	LHS
1200	1300	100	3	PCC	LHS
1300	1310	10	3	PCC	LHS
1380	1460	80	2	PCC	LHS
1460	1500	40	2	PCC	LHS
1500	1560	60	2	PCC	LHS
1630	1760	130	3	PCC	LHS
1760	1840	80	3	PCC	LHS
1960	1990	30	3	PCC	LHS
2170	2310	140	4	PCC	LHS
2670	2690	20	2	PCC	LHS
2690	2770	80	2	PCC	LHS

DESIGN OF BREAST WALLS / REVETMENTS TO PREVENT MAJOR EROSION, ROCK FALL, SLOPE DEGRADATION PARTICULARLY WHERE VULNERABLE STRUCTURES ARE OF RISK				
RECOMMENDATIONS AS PER TABLE-2 / CLAUSE 3.1 OF IS14458 PART-1:1998 HAVE BEEN REPRODUCED HERE UNDER FOR REFERENCE ONLY				
TYPE	DRY STONE	CEMENT MASONRY /PCC WALL	BANDED DRY STONE MASONRY	
TOP WIDTH	0.5	0.5	0.5	
BASE WIDTH	0.29H 0.3H 0.33H	0.23H	0.23H	
BACK BATTER	3:1 4:1 5:1	3:1	3:1	
INWARD DIP OF FOUNDATION	1:3 1:4 1:5	1:3	1:3	
FOUNDATION DEPTH BELOW DRAIN	0.5m 0.5m 0.5m	0.5m	0.5m	
RANGE OF HEIGHT	6m 4m 3m	1-10m	3-8m	
HILL SLOPE ANGLE	35-60	35-70	35-60	
GENERAL	PACK STONE ALONG FOUNDATION BED. USE BOND STONES. MINIMUM STONE SIZE SHALL BE 150X150X150	PVC PIPE 100 MM DIA AT 1M C/C (HORIZONTALLY & VERTICALLY) AND GRADE 1:10	CEMENT MASONRY 1: 6 BANDS OF 0.5 M THICKNESS @ 3M C/C	
TOE PROTECTION IN CASE OF SOFT ROCK/SOIL	NO PITCHING			

TENDER PURPOSE ONLY

<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																													<p>CLIENT:</p> <p>HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.</p>	<p>CONSULTANT:</p> <p>SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in</p>	<p>PROJECT:</p> <p>HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)</p> <p>SCALE: NOT TO SCALE</p>	<table border="1"> <tr> <td>DESIGNED</td> <td>MADHUBABU</td> <td rowspan="4">TITLE : DETAILS FOR SELECTION OF BREAST WALL DRAWING NO : HP/RAH-BHA/MISC/020A</td> <td>REV.</td> <td>0</td> </tr> <tr> <td>DRAWN</td> <td>DANIEL</td> <td>SIZE</td> <td>A3</td> </tr> <tr> <td>CHECKED</td> <td>CHANDRA/ASHIK</td> <td></td> <td></td> </tr> <tr> <td>APPROVED</td> <td>PRADEEP KAPLA</td> <td></td> <td></td> </tr> </table> <p>ROAD NAME : PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.</p>	DESIGNED	MADHUBABU	TITLE : DETAILS FOR SELECTION OF BREAST WALL DRAWING NO : HP/RAH-BHA/MISC/020A	REV.	0	DRAWN	DANIEL	SIZE	A3	CHECKED	CHANDRA/ASHIK			APPROVED	PRADEEP KAPLA		
	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																																																	
DESIGNED	MADHUBABU	TITLE : DETAILS FOR SELECTION OF BREAST WALL DRAWING NO : HP/RAH-BHA/MISC/020A	REV.	0																																																				
DRAWN	DANIEL		SIZE	A3																																																				
CHECKED	CHANDRA/ASHIK																																																							
APPROVED	PRADEEP KAPLA																																																							
SHEET 01 OF 03																																																								

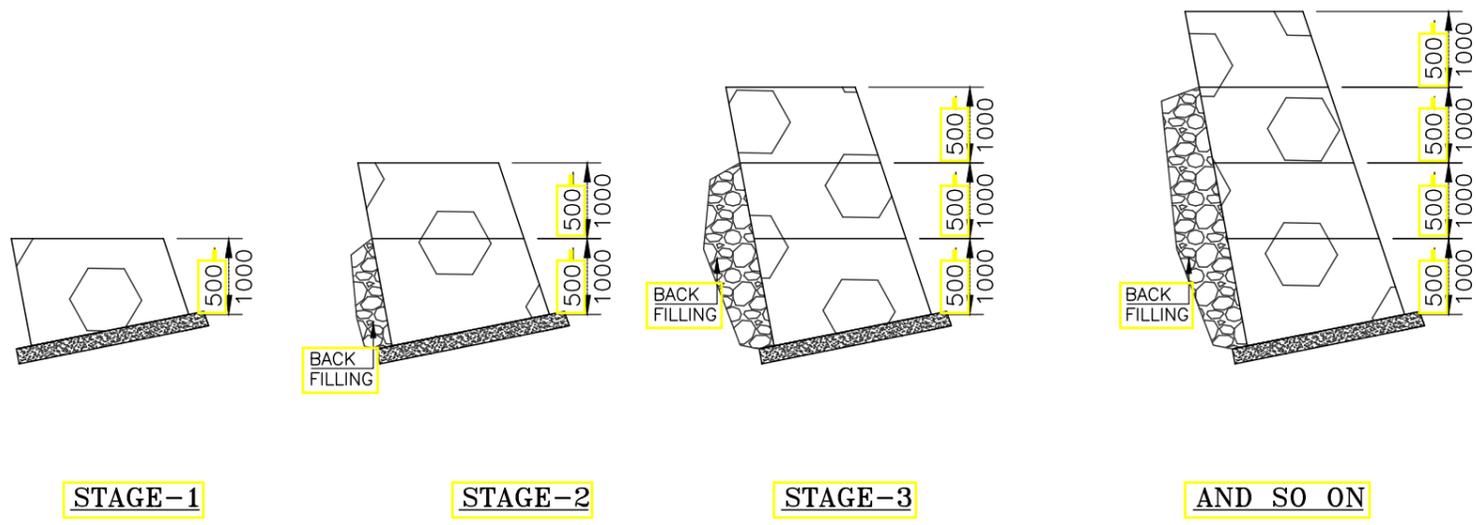


DRY STONE MASONRY BREAST WALL TYPE-1

DRY STONE MASONRY BREAST WALL TYPE-2

DRY STONE MASONRY BREAST WALL TYPE-3

BREAST WALL AT BUILT-UP SECTION



STAGE-1

STAGE-2

STAGE-3

AND SO ON

CONSTRUCTION SEQUENCE

REFER NOTE NO.-9
SCALE 1:40

DESIGN OF BREAST WALLS / REVETMENTS TO PREVENT MAJOR EROSION, ROCK FALL, SLOPE DEGRADATION PARTICULARLY WHERE VULNERABLE STRUCTURES ARE OF RISK

RECOMMENDATIONS AS PER TABLE-2 / CLAUSE 3.1 OF IS14458 PART-1:1998 HAVE BEEN REPRODUCED HERE UNDER FOR REFERENCE ONLY

TYPE	DRY STONE	CEMENT MASONRY / PCC WALL	BANDED DRY STONE MASONRY
TOP WIDTH	0.5	0.5	0.5
BASE WIDTH	0.29H 0.3H 0.33H	0.23H	0.23H
BACK BATTER	3:1 4:1 5:1	3:1	3:1
INWARD DIP OF FOUNDATION	1:3 1:4 1:5	1:3	1:3
FOUNDATION DEPTH BELOW DRAIN	0.5m 0.5m 0.5m	0.5m	0.5m
RANGE OF HEIGHT	6m 4m 3m	1-10m	3-8m
HILL SLOPE ANGLE	35-60	35-70	35-60
GENERAL	PACK STONE ALONG FOUNDATION BED. USE BOND STONES. MINIMUM STONE SIZE SHALL BE 150X150X150	PVC PIPE 100 MM DIA AT 1M C/C (HORIZONTALLY & VERTICALLY) AND GRADE 1:10	CEMENT MASONRY 1: 6 BANDS OF 0.5 M THICKNESS @ 3M C/C
TOE PROTECTION IN CASE OF SOFT ROCK/SOIL	NO PITCHING		

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
 SCALE: NOT TO SCALE

DESIGNED: MADHUBABU
 DRAWN: DANIEL
 CHECKED: CHANDRA/ASHIK
 APPROVED: PRADEEP KAPLA
 ROAD NAME: PACKAGE-IV
 UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.
 TITLE: DETAILS FOR SELECTION OF BREAST WALL
 DRAWING NO: HP/RAH-BHA/MISC/020B
 REV: 0
 SIZE: A3
 SHEET 02 OF 03

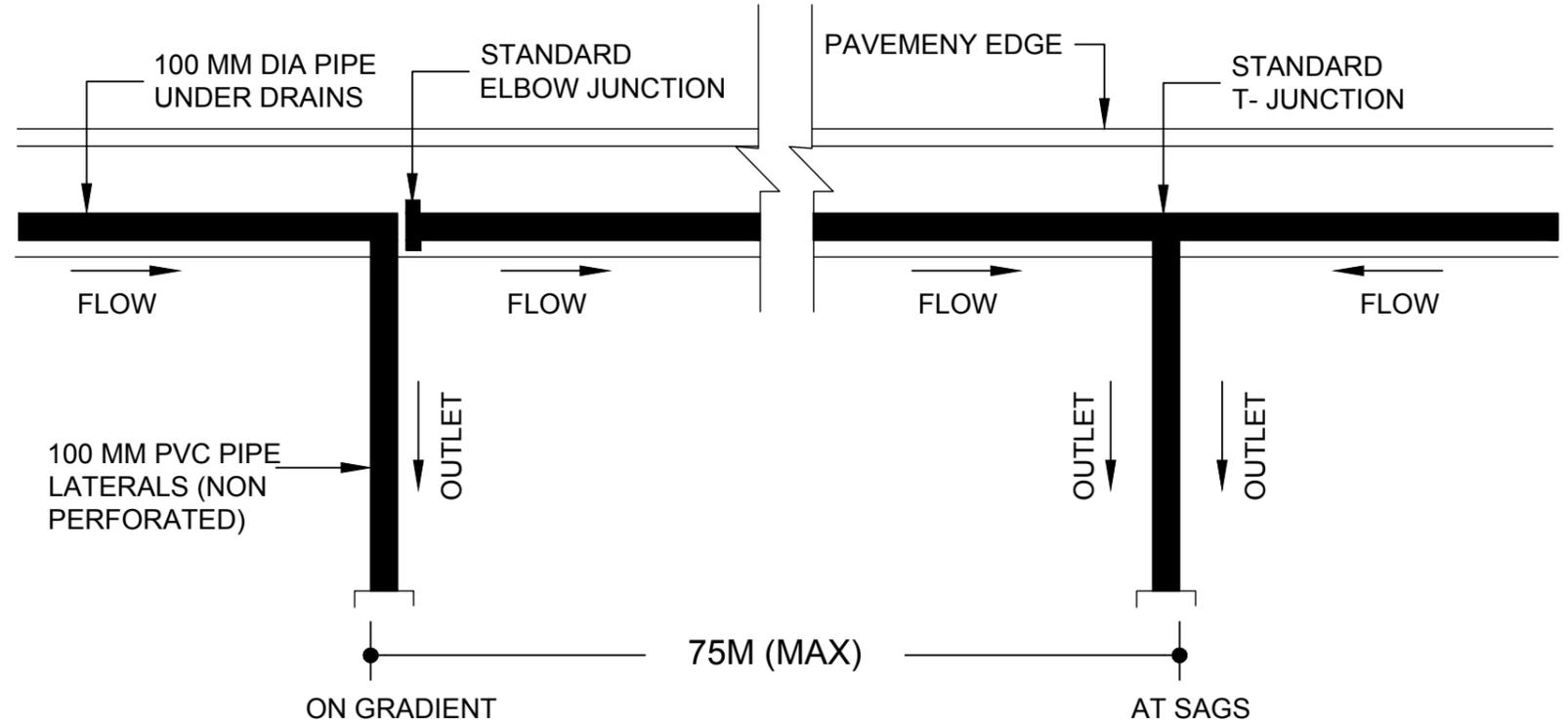
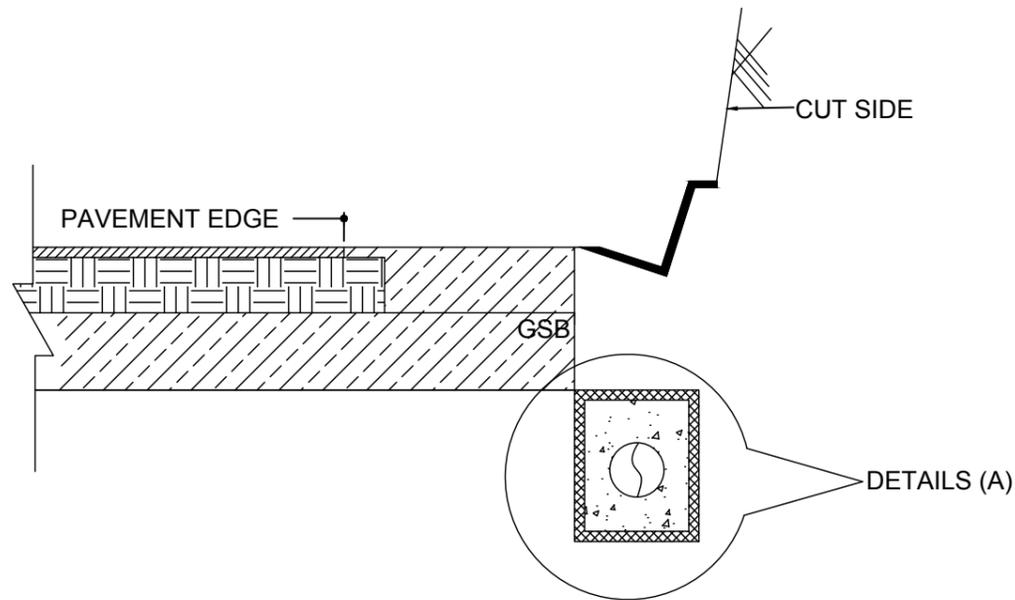
Type (1)	Breast Walls/Revetment Walls					
	Dry Stone (2)		Banded Dry Stone Masonry (3)	Cement Masonry / PCC Wall (4)	Gabion (5)	Horizontal Drum Walls (6)
Diagrammatic cross-section						
Top width	0.5		0.5	0.5	2	1
Base width	0.29H	0.3H	0.33H	0.23H	2	1
Front batter						
Back batter	3:1	4:1	5:1	3:1	3 to 5:1	3:1
Inward dip of foundation	1:3	1:4	1:5	1:3	1:5	1:3
Foundation depth below drain	0.5 m	0.5 m	0.5 m	0.5 m	0.5-1 m	0.25 m
Range of height	6 m	4 m	3 m	3-8 m	1-10 m	2.2 m
Hill slope angle	35-60		35-60	35-70	35-60	35
Toe protection in case of soft rock/soil	No pitching		No	No	No	No
General	Pack stone along foundation bed. Use bond stones. Specify minimum stone size.		Cement masonry (1:6) bands of 0.5 m thickness at 3 m c/c.	Weep holes 15 x 15 cm at 1.5-2 m c/c and grade 1:10. Cement sand (1:6)	Step in front face 20-50 cm wide. Otherwise as for retaining walls.	Use vertical single drum for 0.7 m height. Anchor drum walls on sides. Fill debris material.
	Revetment walls have uniform section of 0.5 m/0.75 m thickness for batter of 2:1 or more. Section shaped to suit variation and overbreak in rock cut slope.					
Application	Least durable/economical		Little used	Most durable/costly	Quite durable/costlier or Very flexible	Promising/most economical or Flexible
	Non ductile structures most susceptible to earthquake damage.					
	Revetments are used to prevent only major erosion, rock fall, slope degradation particularly where vulnerable structures are of risk.					

REMARKS

1. Wall construction requires special skills and practical labour. Curing of masonry walls generally not feasible in hills due to paucity of water.
2. The typical dimensions shown rely both on well-drained backfill and good foundation conditions.
3. Detailed design is necessary in case of soil slopes and walls higher than 6m and poor foundation conditions.
4. Gabion walls should be used in case of poor foundation/seepage conditions. They can take considerable differential settlement and some slope movement.
5. Other measures should also be taken, for example, check drains, turfing, benching of cut slopes in soft rocks, sealing of cracks, All preventive measures should be implemented in one season. Total system of measures is far more effective than individual measures.
6. All the details / design of breast walls as per is 14458(part 1):1998 shall be followed

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED	CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA	TITLE : DETAILS FOR SELECTION OF BREAST WALL DRAWING NO : HP/RAH-BHA/MISC/020C ROAD NAME : PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	REV: 0 SIZE: A3 SHEET 03 OF 03
SCALE: NOT TO SCALE												

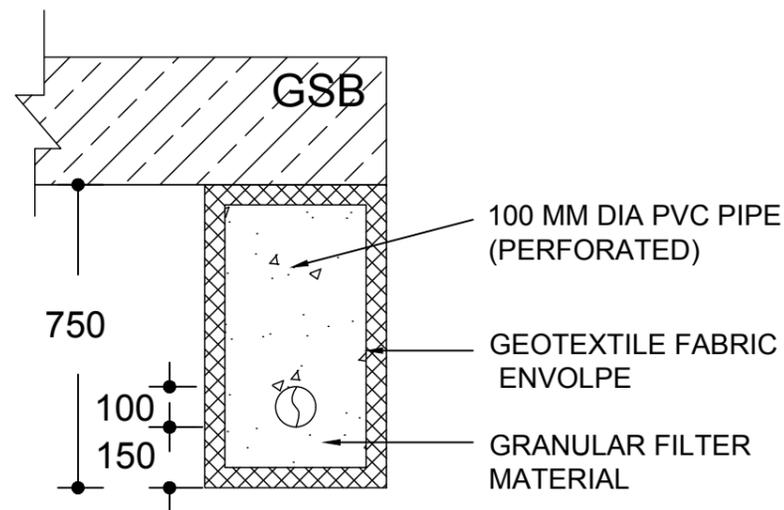


DETAILS OF SUB-SURFACE DRAIN LATERALS

* LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 75M INTERVAL AT GRADES THE 75M DISTANCE MAY EXCEED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

Schedule for Sub Surface Drain

S.No	From (km)	To (km)	Length in(m)	Side
01	2+600	2+740	140	LHS



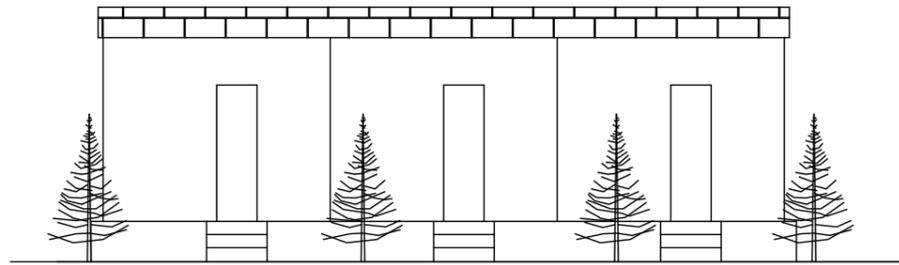
DETAILS (A) OF PIPE UNDER DRAIN

NOTES:

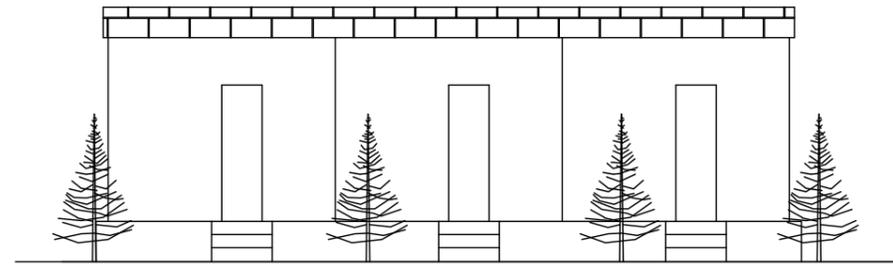
1. SUB-SURFACE DRAINS SHALL BE MEASURED IN LINEAL METERS INCLUDING PIPE LATERALS.
2. COST PER LINEAL METER SHALL INCLUDE COST OF EXCAVATION, PIPE, FITTINGS, GRANULAR FILTER MATERIAL.
3. COST FOR SUB-SURFACE DRAIN OUT LET PROTECTION SHALL BE CONSIDERED AS INCIDENTALS AND SHALL BE BUILT IN TO THE PER LINEAL METER COST OF THE SUB-SURFACE DRAIN.
4. LOCATION OF THE PIPE UNDER DRAINS SHALL BE AS PER DIRECTED BY THE ENGINEER.
5. STANDARD FIXTURES SUPPLIED BY MANUFACTURE TO BE USED.
6. THE LOCATION SHOWN IS TENTATIVE AND TO BE FINALIZED BY THE CONTRACTOR IN CONSULTATION WITH CSC/HPRIDC AS PER SITE CONDITION.

TENDER PURPOSE ONLY

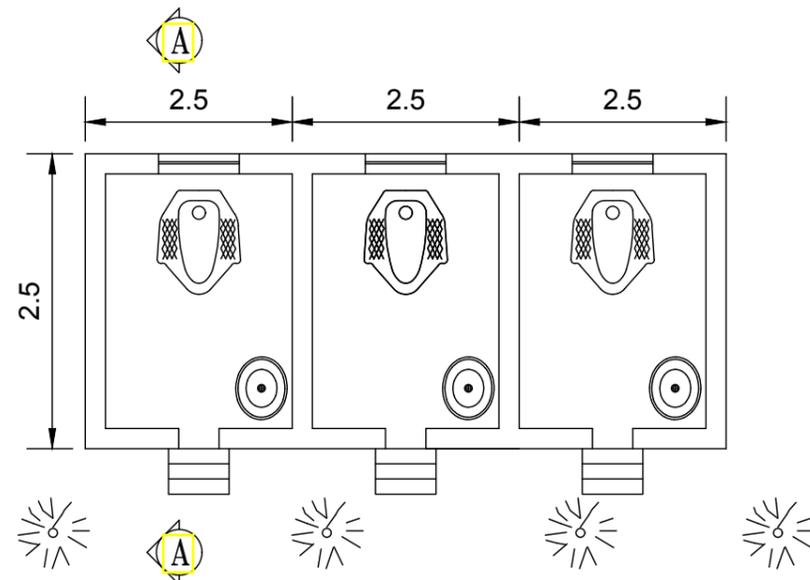
CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.					CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in					PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)					DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA					TITLE: SUB-SURFACE DRAIN DETAIL DRAWING NO: HP/RAH-BHA/MISC/021					ROAD NAME: UPGRADEATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.					REV: 0 SIZE: A3 PACKAGE-IV SHEET 01 OF 01				
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																												



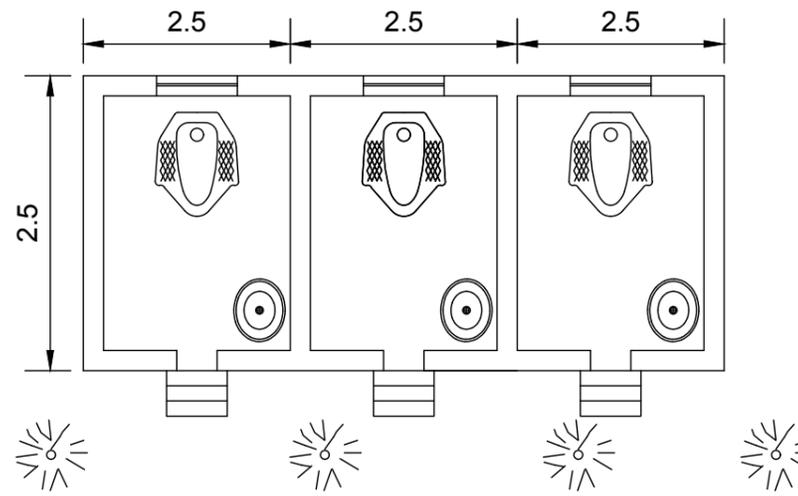
ELEVATION
TOILET FOR MEN



ELEVATION
TOILET FOR WOMEN



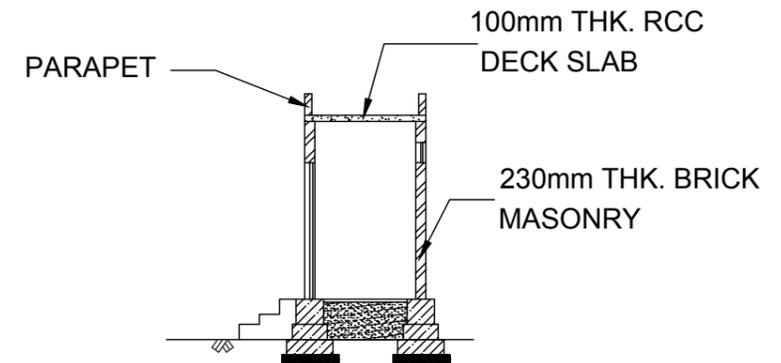
PLAN
TOILET FOR MEN



PLAN
TOILET FOR WOMEN

Specifications

1. 2.5x2.5m for Bio Toilets.
2. Providing Six Bio Toilets
(Three for Men / Three for Women)



SECTION A-A

TENDER PURPOSE ONLY

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

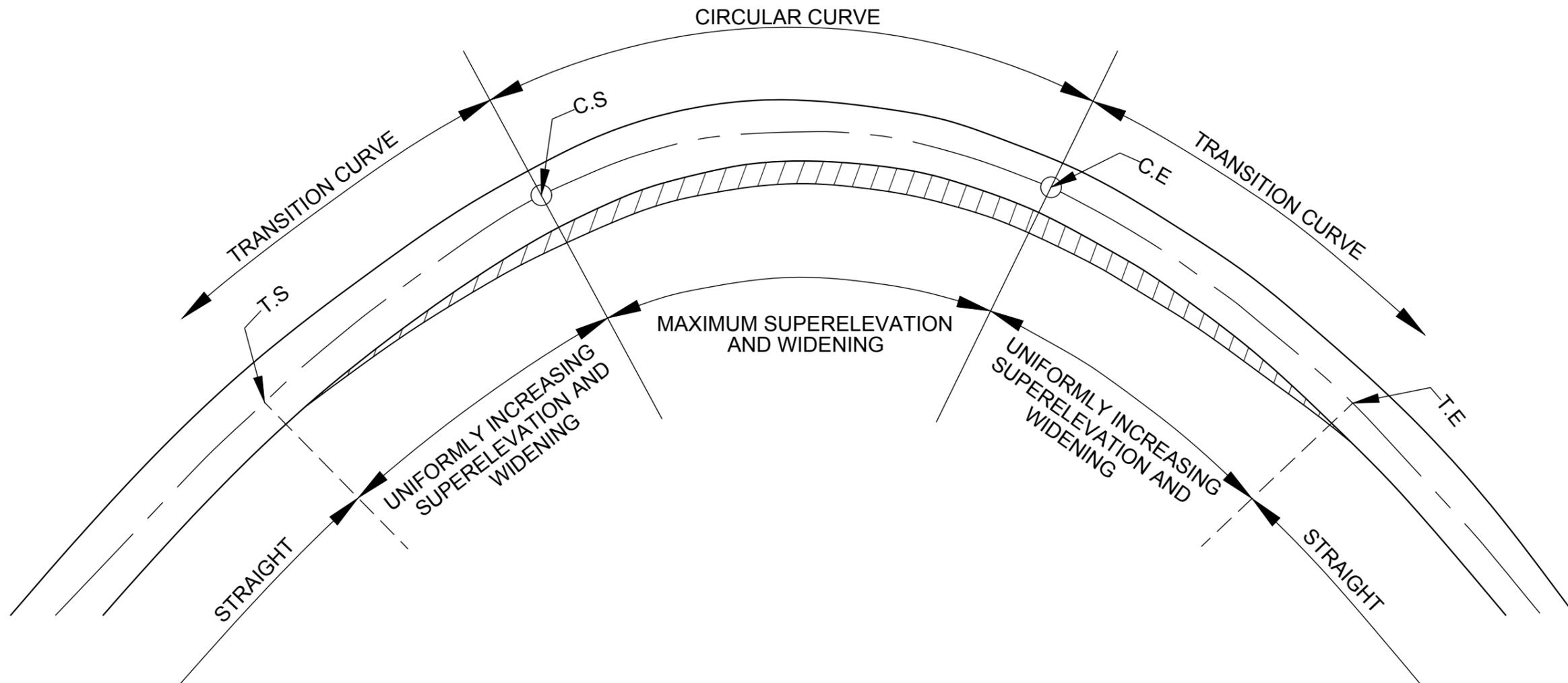
 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)
 SCALE: NOT TO SCALE

DESIGNED	MADHUBABU	TITLE :	REV. 0
DRAWN	DANIEL	TYPICAL DETAILS OF TOILET PROVISIONS	SIZE : A3
CHECKED	CHANDRA/ASHIK	DRAWING NO :	HP/RAH-BHA/MISC/022
APPROVED	PRADEEP KAPLA	ROAD NAME :	PACKAGE-IV
		UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	SHEET 01 OF 01



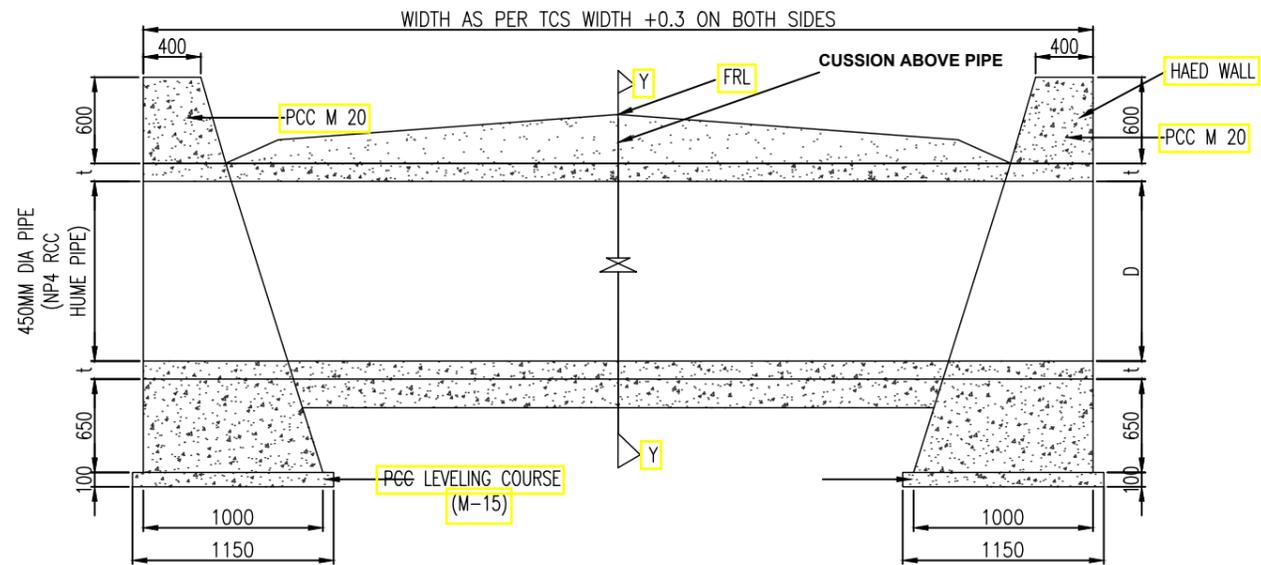
METHOD OF EFFECTING WIDENING AND BUILDING IN SUPERELEVATION

T.S = TRANSITION START
 C.S = CURVE START
 C.E = CURVE END
 T.E = TRANSITION END

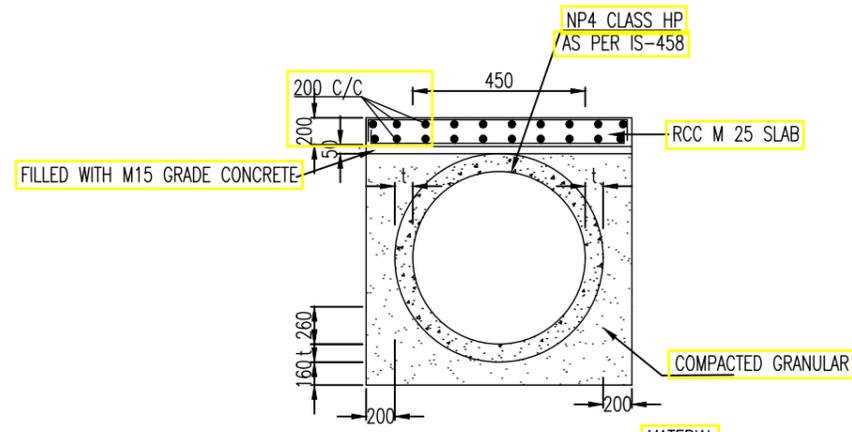
TENDER PURPOSE ONLY

<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																						CLIENT:  HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT:  SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)	DESIGNED: MADHU.K DRAWN: DANIEL CHECKED: CS/AH APPROVED: PRADEEP KAPLA	TITLE : METHOD OF EFFECTING WIDENING AND BUILDING IN SUPERELEVATION DRAWING NO : HP/RAH-BHA/MISC/023A ROAD NAME : Package-IV: UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.
	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																										
SCALE: NOT TO SCALE	SHEET 01 of 02																																

Z:\01041055-HPSRTP\04 Design\01 Highways\02 Drawings\Working\05_DPR 2019 12 27\PKG-4 OSR-11112.06.2021\06_HSD\023_EFFECTING WIDENING AND BUILDING IN SUPERELEVATION.dwg

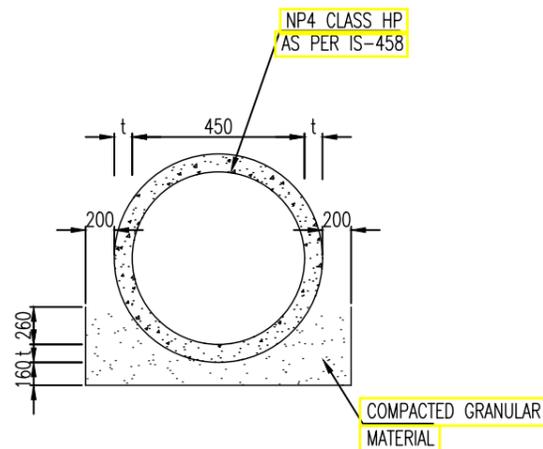


UTILITIES DUCT IN BUILT UP LOCATIONS



SECTION Y-Y WITHOUT CUSHION

NOTE: THIS SECTION IS APPLICABLE WHEN THE CUSHION IS LESS THAN 300MM



SECTION Y-Y WITH CUSHION

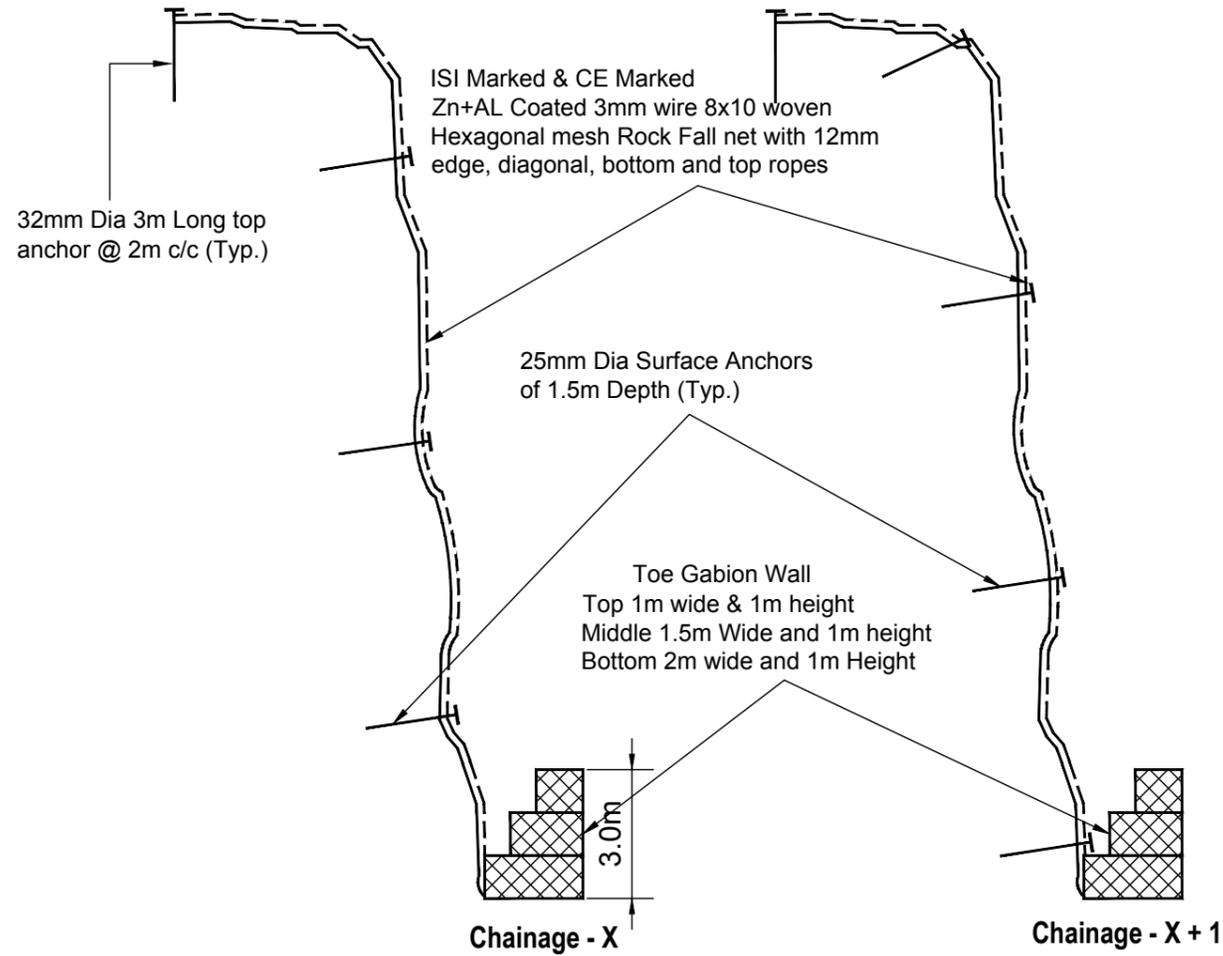
NOTE: THIS SECTION IS APPLICABLE WHEN THE CUSHION IS MORE THAN 300MM

1. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF NP4 CLASS TYPE CONFORMING TO I.S : 458.
2. PIPES SHALL BE JOINTED BY INTERNAL FLUSH JOINT AS PER IS 458 & AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORTH SPECIFICATIONS OF ROAD AND BRIDGE WORKS. JOINTING SPACE SHALL BE FILLED WITH CEMENT MORTAR OF PROPORTION 1:2 OF CEMENT & SAND.
3. FRL, CAMBER/SUPERELEVATION & WIDTH OF THE MEDIAN AT PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY PLAN, PROFILE AND CROSS SECTION DRAWINGS.
4. FOR PIPE BEDDING COMPACTED GRANULAR MATERIAL HAS BEEN PROVIDED AS PER THE SPECIFICATION OF IRC: SP: 13-2004.
5. ANY LOOSE/UNSUITABLE SOIL FOUND BELOW THE PIPE/HEAD WALL, THE SAME SHALL BE REPLACED WITH THE SAND OR COMPACTED GRANULAR MATERIAL AS DIRECTED BY ENGINEER-IN-CHARGE.
6. LONGITUDINAL SLOPE OF PROPOSED PIPE SHALL MATCH WITH THE EXISTING PIPE BUT SHALL NOT BE LESS THAN 1:1000.
7. FIRST CLASS BEDDING CAN BE USED FOR A MAXIMUM FILL HEIGHT OF 4M.
8. GRADE OF CONCRETE FOR PCC HEAD WALL IS M20.
9. THE SECTION OF HEADWALL SHOWN IN THE DRAWING IS TYPICAL ONLY.
10. THE LOCATION SHALL BE FINALIZED BY THE CONTRACTOR IN CONSULTATION WITH CSC/ HPRIDC/ UTILITY AGENCIES AS APPLICABLE.

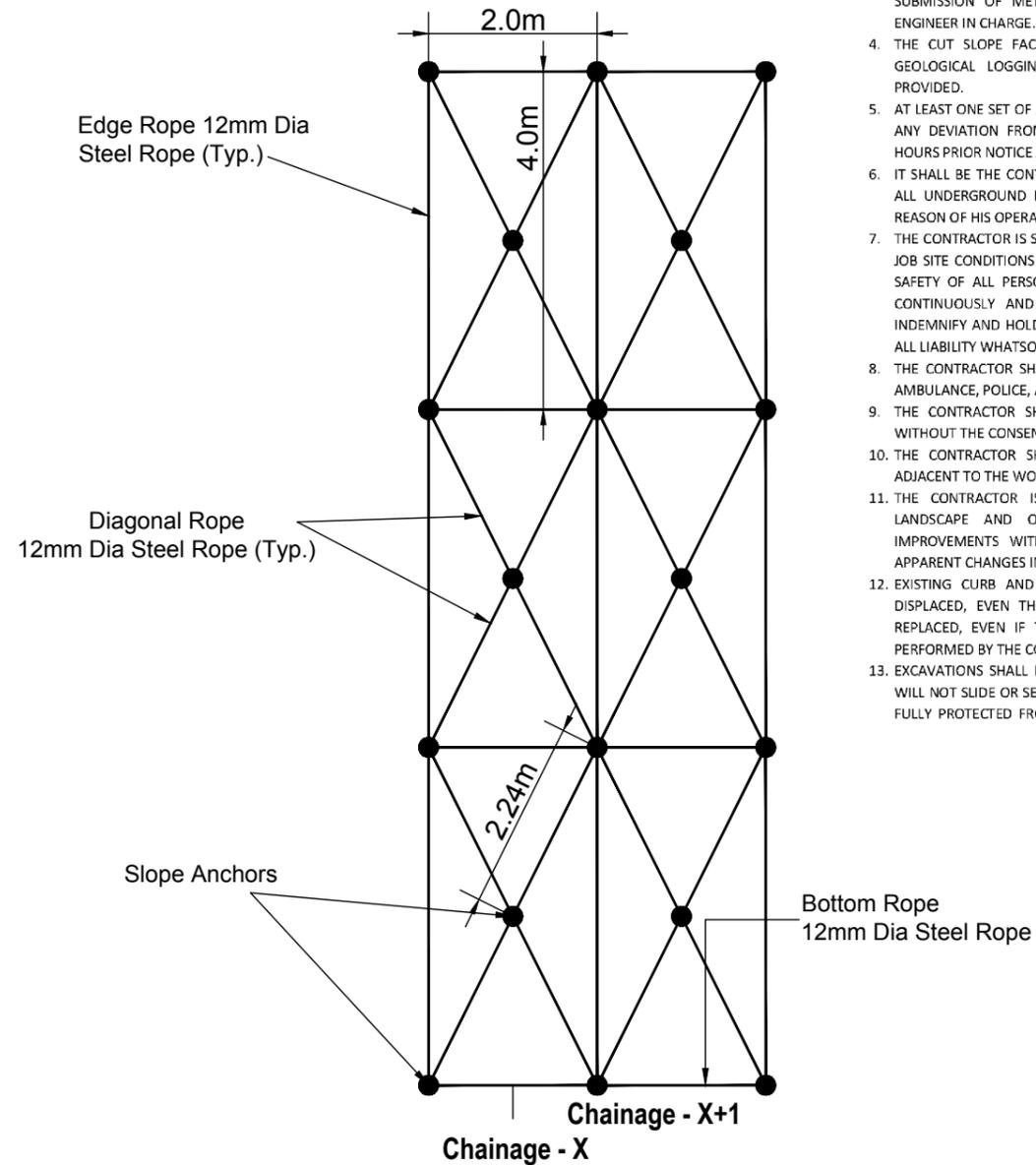
TENDER PURPOSE ONLY

					CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA	TITLE : UTILITY DUCT WITH DRAIN DETAILS	REV: 0 SIZE: A3
							SCALE: NOT TO SCALE	ROAD NAME : PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	DRAWING NO : HP/RAH-BHA/MISC/024	SHEET 01 OF 01

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED



Typical Cross Sectional View of the Proposed Rock Fall Netting



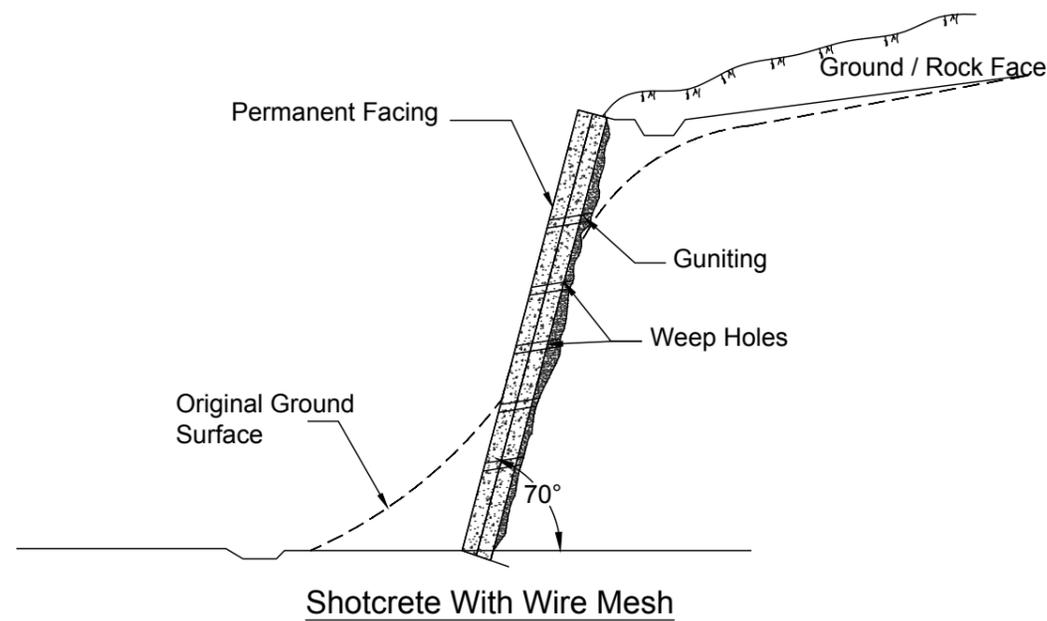
Typical Facing View of the Layout of Anchor, Edge Rope, Bottom Rope and Diagonal Rope

NOTES

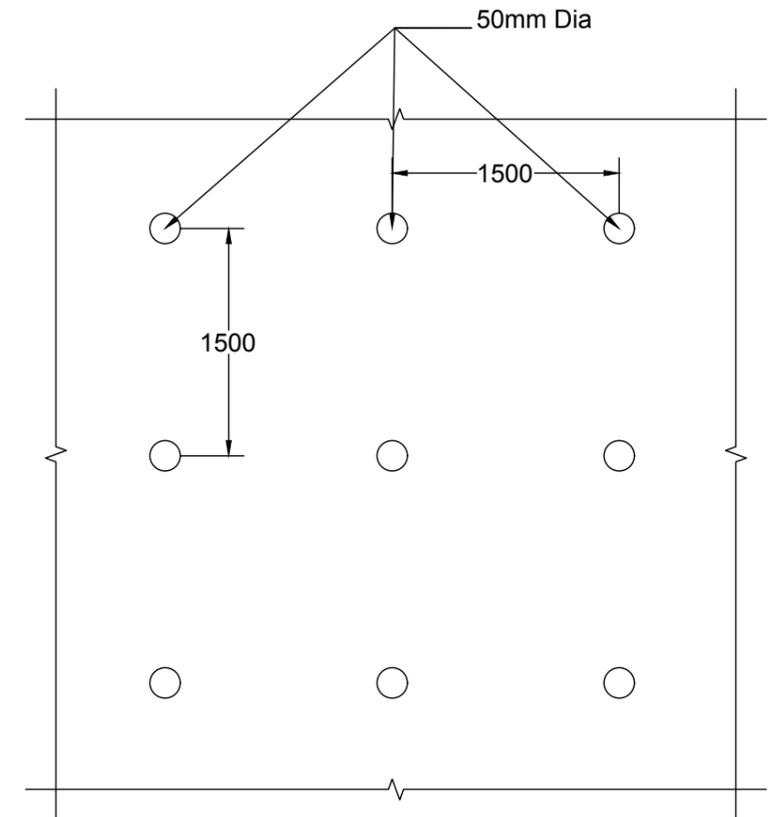
1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH LATEST IRC CODES, HRB GUIDELINES AND SPECIAL REPORTS.
2. THE SCHEME PROVIDED WITH SPECIFICATIONS FOR ROCK FALL NETTING IS INDICATIVE AND EXECUTING AGENCY SHALL SUBMIT A DETAILED DRAWINGS WITH ALL CONNECTIONS AND ANCHORAGES.
3. THE SPECIFICATIONS MENTIONED BELOW OR EQUIVALENT SHALL BE ADOPTED AFTER SUBMISSION OF METHOD STATEMENT FOR EXECUTION OF WORKS FOR APPROVAL OF ENGINEER IN CHARGE.
4. THE CUT SLOPE FACES SHALL BE LOGGED FOR JOINTS, SHEAR ZONES AND BASED ON GEOLOGICAL LOGGING ANCHORAGE SYSTEMS AS PER SITE REQUIREMENTS SHALL BE PROVIDED.
5. AT LEAST ONE SET OF APPROVED PLANS SHALL BE ON THE SITE AT ALL TIMES FOR INSPECTION. ANY DEVIATION FROM THE APPROVED PLANS DURING CONSTRUCTION WILL REQUIRE 48 HOURS PRIOR NOTICE AND APPROVAL OF ENGINEER IN CHARGE.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THE EXISTENCE OF ANY AND ALL UNDERGROUND FACILITIES, HT LINES, ETC WHICH MAY BE SUBJECT TO DAMAGE BY REASON OF HIS OPERATIONS.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR MITIGATION AND MANAGING THE RISKS OF THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND DEFEND, INDEMNIFY AND HOLD THE DESIGN PROFESSIONAL AND HPRIDCL HARMLESS FROM ANY AND ALL LIABILITY WHATSOEVER.
8. THE CONTRACTOR SHALL PROVIDE EMERGENCY TELEPHONE NUMBERS FOR PUBLIC WORKS, AMBULANCE, POLICE, AND FIRE DEPARTMENTS AT THE JOB SITE.
9. THE CONTRACTOR SHALL NOT DISTURB OR DESTROY ANY PERMANENT SURVEY POINTS WITHOUT THE CONSENT OF THE ENGINEER IN CHARGE.
10. THE CONTRACTOR SHALL PROVIDE FOR INGRESS AND EGRESS FOR PRIVATE PROPERTY ADJACENT TO THE WORK AREA THROUGHOUT THE PERIOD OF CONSTRUCTION.
11. THE CONTRACTOR IS RESPONSIBLE FOR MATCHING EXISTING STREETS SURROUNDING LANDSCAPE AND OTHER IMPROVEMENTS, SURROUNDING LANDSCAPE AND OTHER IMPROVEMENTS WITH A SMOOTH TRANSITION IN GRADE AVOIDING ANY ABRUPT OR APPARENT CHANGES IN GRADE OR CROSS SLOPE, LOW SPOTS OR HAZARDOUS CONDITIONS.
12. EXISTING CURB AND SIDEWALK WITHIN THE PROJECT LIMITS THAT ARE DAMAGED OR DISPLACED, EVEN THOUGH THEY WERE NOT TO BE REMOVED, SHALL BE REPAIRED OR REPLACED, EVEN IF THE DAMAGE OR DISPLACEMENT OCCURRED PRIOR TO ANY WORK PERFORMED BY THE CONTRACTOR.
13. EXCAVATIONS SHALL BE ADEQUATELY SHORED, BRACED AND SHEETED SO THAT THE EARTH WILL NOT SLIDE OR SETTLE AND SO THAT ALL EXISTING IMPROVEMENTS OF ANY KIND WILL BE FULLY PROTECTED FROM DAMAGE. ANY DAMAGE RESULTING FROM A LACK OF ADEQUATE

TENDER PURPOSE ONLY

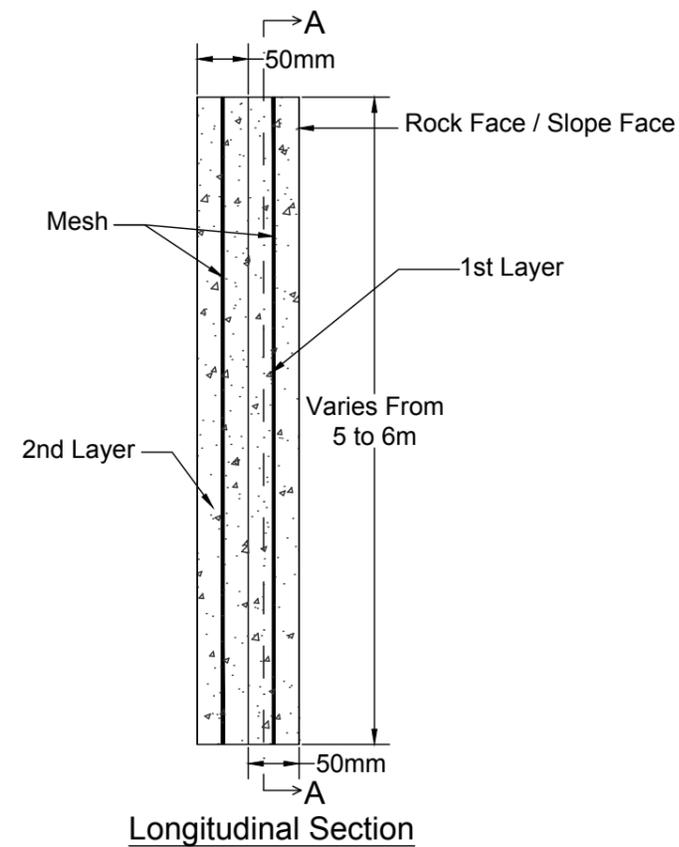
	CLIENT:  HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT:  SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA	TITLE: TYPICAL DETAILS OF ROCK FALL NETTING DRAWING NO: HP/RAH-BHA/MISC/25 ROAD NAME: PACKAGE-IV UPGRADEATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	REV: 0 SIZE: A3 SHEET 01 OF 01														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DESIGNED</th> <th>DRAWN</th> <th>CHECKED</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED								SCALE: NOT TO SCALE					
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED														



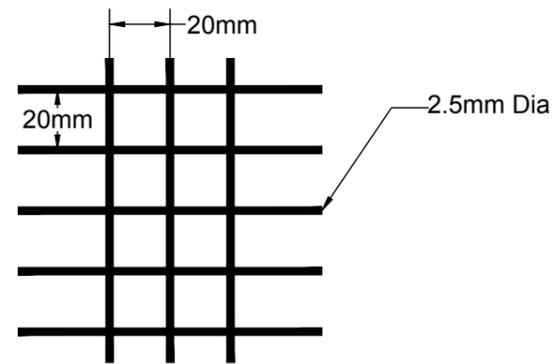
Shotcrete With Wire Mesh



Shotcrete Facing View



Longitudinal Section



Section A-A

Slope Geology code
Soil Overburden(S)
Soil with Boulders(SB)
Fractured and Fragmented Soft Rock(FFR-SR)
Fractured and Fragmented Hard Rock(FFR-HR)
Jointed Hard Rockmass(JHR)
Mixed Geology(MG)

SHOTCRETE WITH WIRE MESH SCHEDULE

S.No	Design Ch (Km)		Length (m)	Side	Slope Classification
	From	To			
1	900	1050	150	LHS	FFR-HR+JHR

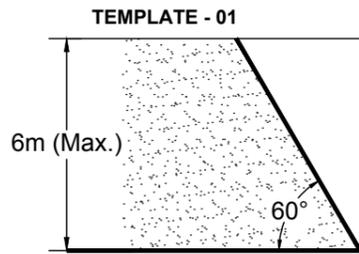
NOTES

- GUNITING FOR THE CUT SLOPE FACE SHALL BE CARRIED OUT PROVIDING 25 MM THICK GUNITING TO ROCK SURFACE IN CEMENT MORTAR 1 : 3 PROPORTION BY WEIGHT.
- SHOTCRETE WITH DESIGNED MIX CEMENT CONCRETE M25 SHALL BE LAID IN TWO/THREE LAYERS OF 50MM THICK WITH WIRE MESH AS DIRECTED BY ENGINEER IN CHARGE. MIN TWO LAYERS I.E 100MM THICKNESS IS TO BE PROVIDED.
- WELDED WIRE MESH OF SQUARE SIZE 20MM WITH WIRE DIAMETER OF 2.50MM AS PER ANNEXURE A-1 OF IS 4948-2002 SHALL BE CONTINUOUS ACROSS ALL SHOTCRETE JOINTS. MINIMUM MESH LAP SHOULD BE TWO SQUARES.
- SHOTCRETING SHALL CONFORM TO SPECIFICATION FOR MATERIALS PROPORTIONING AND APPLICATION OF SHOTCRETE.
- SHOTCRETE TO BE APPLIED IN A HORIZONTAL OR DOWNWARD MOTION DIRECTION IN SUCH A WAY THAT VOIDS BEHIND REINFORCING STEEL DO NOT OCCUR.
- DRAINAGE WEEP HOLES ARE INTENDED TO PROVIDE DRAINAGE RELIEF OF HYDROSTATIC PRESSURE BEHIND SHOTCRETE FACE. MIN 50MM DIAMETER HOLES AT 1500MM VERTICAL AND HORIZONTAL (STAGGERED) TYPICAL OR AS DIRECTED BY ENGINEER. WEEP HOLES MAY BE DRILLED IN THROUGH HARDENED SHOTCRETE.
- THE AVERAGE HEIGHT OF SHOTCRETE IS 5M ABOVE GROUND LEVEL AND MAY VARY AS PER SITE CONDITIONS.
- THE LOCATIONS ARE AS PER THE SLOPE CLASSIFICATION BASED ON GEOLOGY AND THE EXPOSED SURFACE OF THE EXISTING SLOPE AND ARE FOR GUIDANCE.
- THE FINAL LOCATIONS AND HEIGHTS CAN BE ALTERED IN CONSULTATION OF CSC AND HPRDC AFTER CUTTING AND OBSERVATION OF EXPOSED FACES TO THE REQUIRED WIDTH FOR WIDENING.

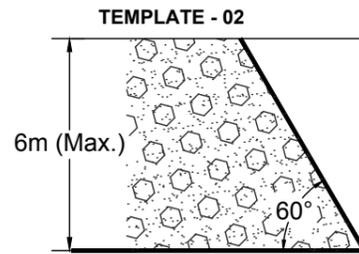
TYPICAL DETAILS OF SHOTCRETE WITH WIRE MESH

TENDER PURPOSE ONLY

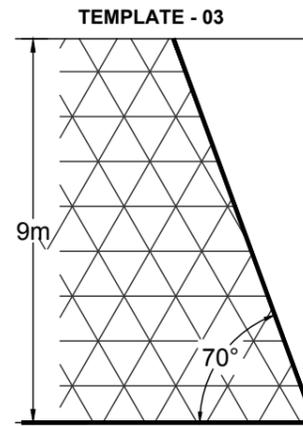
CLIENT: HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.					CONSULTANT: SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in					PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)					DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA		TITLE : TYPICAL DETAILS OF SHOTCRETE WITH WIRE MESH DRAWING NO : HP/RAH-BHA/MISC/26		REV: 0 SIZE : A3	
ROAD NAME : UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.										PACKAGE-IV		SCALE: NOT TO SCALE		SHEET 01 OF 01						



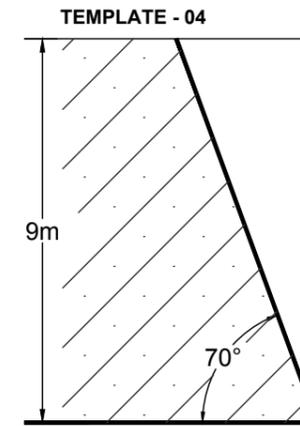
CUT SLOPE IN SOIL (SS)



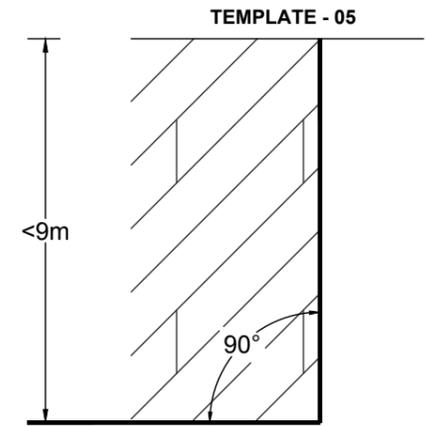
CUT SLOPE IN SOIL WITH BOULDERS (SSB)



CUT SLOPE IN FRACTURED & FRAGMENTED IN SOFT ROCK (FF-SR)



CUT SLOPE IN FRACTURED & FRAGMENTED IN HARD ROCK (FF-HR)



CUT SLOPE IN JOINTED HARD ROCK (JHR)

GENERAL SLOPE CUT TEMPLATES FOR SLOPE PROTECTION DESIGN

SCHEDULE

S.No	Design Chainage		Slope Classification
	From	To	
1	0+300	0+380	SS
2	0+380	0+440	SS
3	0+440	0+480	SS
4	0+480	0+560	SS
5	0+570	0+660	SS
6	0+770	0+840	SSB
7	0+850	0+870	SS
8	0+870	0+900	SSB
9	0+900	1+050	FFR-HR
10	1+050	1+120	SSB
11	1+120	1+300	SS
12	1+360	1+460	SSB
13	1+500	1+580	SSB
14	1+600	1+760	SSB
15	1+760	1+840	SSB
16	1+900	1+930	SSB
17	1+930	2+060	SSB
18	2+060	2+180	SSB
19	2+180	2+310	SSB
20	2+310	2+380	SSB
21	2+420	2+500	SSB
22	2+610	2+690	SSB

TENDER PURPOSE ONLY

	CLIENT:  HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.	CONSULTANT:  SATRA SERVICES AND SOLUTIONS PVT LTD. #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India. Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in	PROJECT: HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP) SCALE: NOT TO SCALE	DESIGNED: MADHUBABU DRAWN: DANIEL CHECKED: CHANDRA/ASHIK APPROVED: PRADEEP KAPLA ROAD NAME: PACKAGE-IV UPGRADATION OF RAGHUNATHPURA-MANDI-HARPURA-BHARARI ROAD IN BILASPUR DISTRICT FROM KM 0/000 TO KM 2/740.	TITLE : GENERAL SLOPE CUT TEMPLATES FOR SLOPE PROTECTION DESIGN DRAWING NO : HP/RAH-BHA/MISC/27 REV: 0 SIZE : A3 SHEET 01 OF 01
--	---	---	---	---	---

STRUCTURAL DRAWINGS

JETTY DRAWINGS



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

CLIENT:

 HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

 SATRA SERVICES AND SOLUTIONS PVT.LTD.
 #1-8-359 to 363, 4th Floor, Centre Point Building, SP Road, Begumpet, Secunderabad, Telangana - 500003, India.
 Tel: +91 40 2784 0040, Fax: +91 40 2784 0050, E-mail: info@satragroup.in, Web: www.satragroup.in

PROJECT:
 HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE: AS SHOWN

DATE: _____

JOB No. : 01041055

TITLE : JETTY PLAN LAYOUT

DRAWING NO : HP/STR/JETTY/101

ROAD NAME : Package-IV:
Upgradation of Raghunathpura-Mandi-Harpura-Bharari Road in Bilaspur District from Km 0/000 to Km 2/740.

REV: 0
 SIZE: A3
 SHEET 01 OF 07