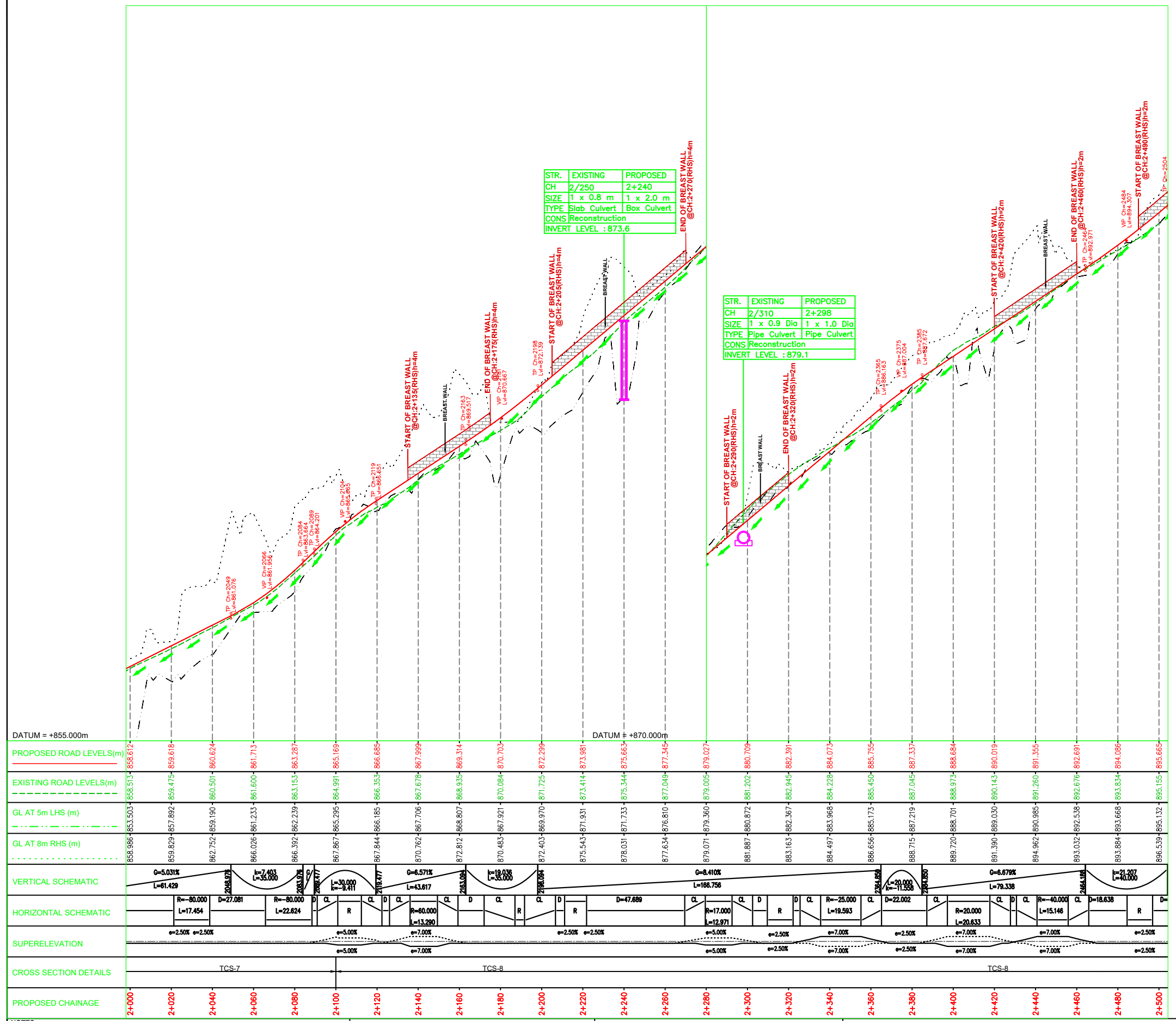


← MANDI

KALKHAR →



DATUM = +855.000m	858.986	859.829	862.752	866.026	866.392	867.867	867.844	870.762	872.812	875.543	878.031	877.634	879.071	881.887	883.163	884.497	886.656	888.715	889.720	891.390	894.962	893.032	893.884	896.539				
DATUM = +870.000m	858.513	859.475	860.501	861.600	863.153	864.991	866.353	867.999	870.084	871.725	873.414	875.344	877.048	879.005	881.202	882.945	884.228	885.450	887.045	888.973	890.143	891.260	892.670	894.086	895.155			
PROPOSED ROAD LEVELS(m)	858.513	859.475	860.501	861.600	863.153	864.991	866.353	867.999	870.084	871.725	873.414	875.344	877.048	879.005	881.202	882.945	884.228	885.450	887.045	888.973	890.143	891.260	892.670	894.086	895.155			
EXISTING ROAD LEVELS(m)	858.513	859.475	860.501	861.600	863.153	864.991	866.353	867.999	870.084	871.725	873.414	875.344	877.048	879.005	881.202	882.945	884.228	885.450	887.045	888.973	890.143	891.260	892.670	894.086	895.155			
GL AT 5m LHS (m)	858.503	857.892	859.190	861.233	862.239	865.295	866.185	867.706	870.883	871.931	873.414	875.344	877.048	879.005	881.202	882.945	884.228	885.450	887.045	888.973	890.143	891.260	892.670	894.086	895.155			
GL AT 8m RHS (m)	858.986	859.829	862.752	866.026	866.392	867.867	867.844	870.762	872.812	875.543	878.031	877.634	879.071	881.887	883.163	884.497	886.656	888.715	889.720	891.390	894.962	893.032	893.884	896.539				
VERTICAL SCHEMATIC	[Vertical alignment diagram showing grades and curves]																											
HORIZONTAL SCHEMATIC	[Horizontal alignment diagram showing curves and stations]																											
SUPERELEVATION	[Superelevation diagram showing cross-slopes]																											
CROSS SECTION DETAILS	TCS-7														TCS-8													
PROPOSED CHAINAGE	2+000	2+020	2+040	2+060	2+080	2+100	2+120	2+140	2+160	2+180	2+200	2+220	2+240	2+260	2+280	2+300	2+320	2+340	2+360	2+380	2+400	2+420	2+440	2+460	2+480	2+500		

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

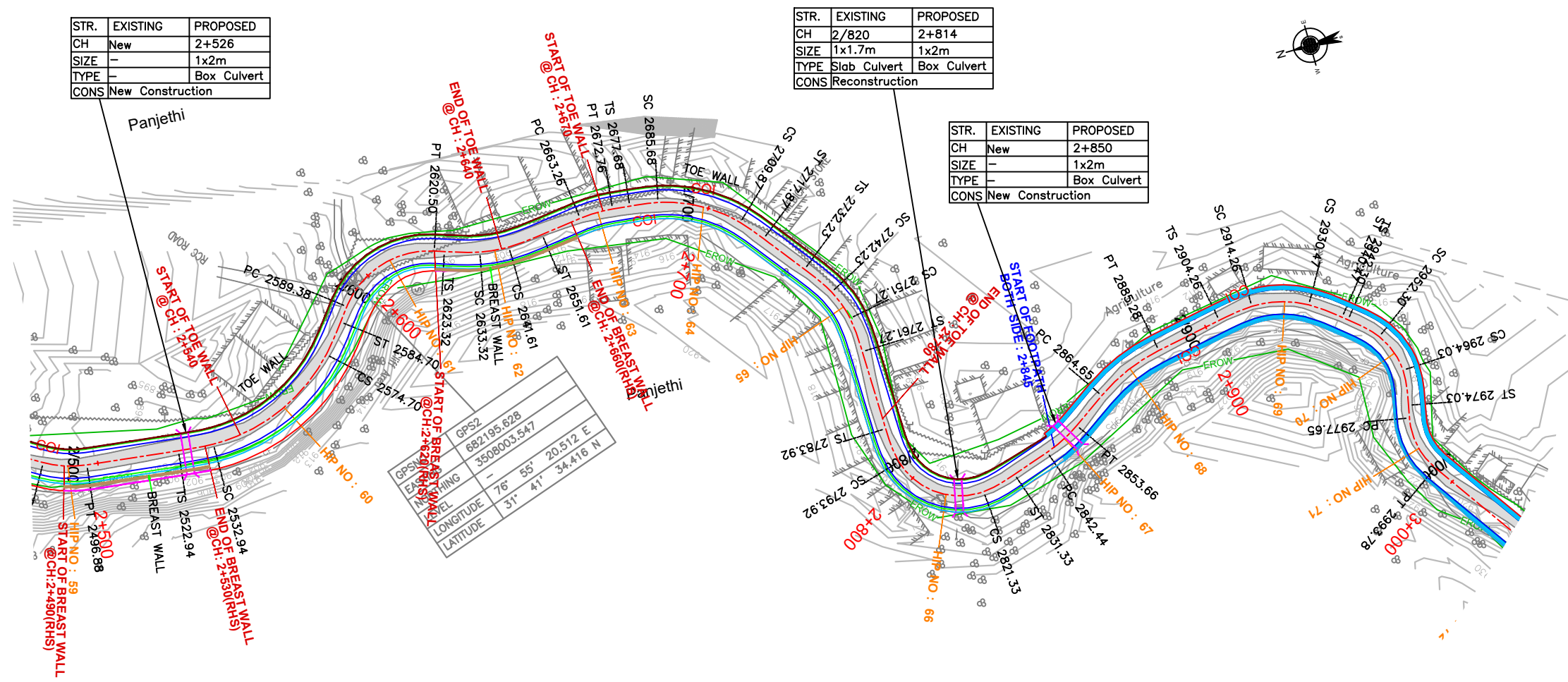
PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE : DRAINAGE PLAN & PROFILE FROM CH: 2+000 TO CH: 2+500
DRAWN	SWAROOPA RANI	
CHECKED	PRANVI	DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
APPROVED	PRANVI	ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 5B OF 22B

TENDER PURPOSE ONLY



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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

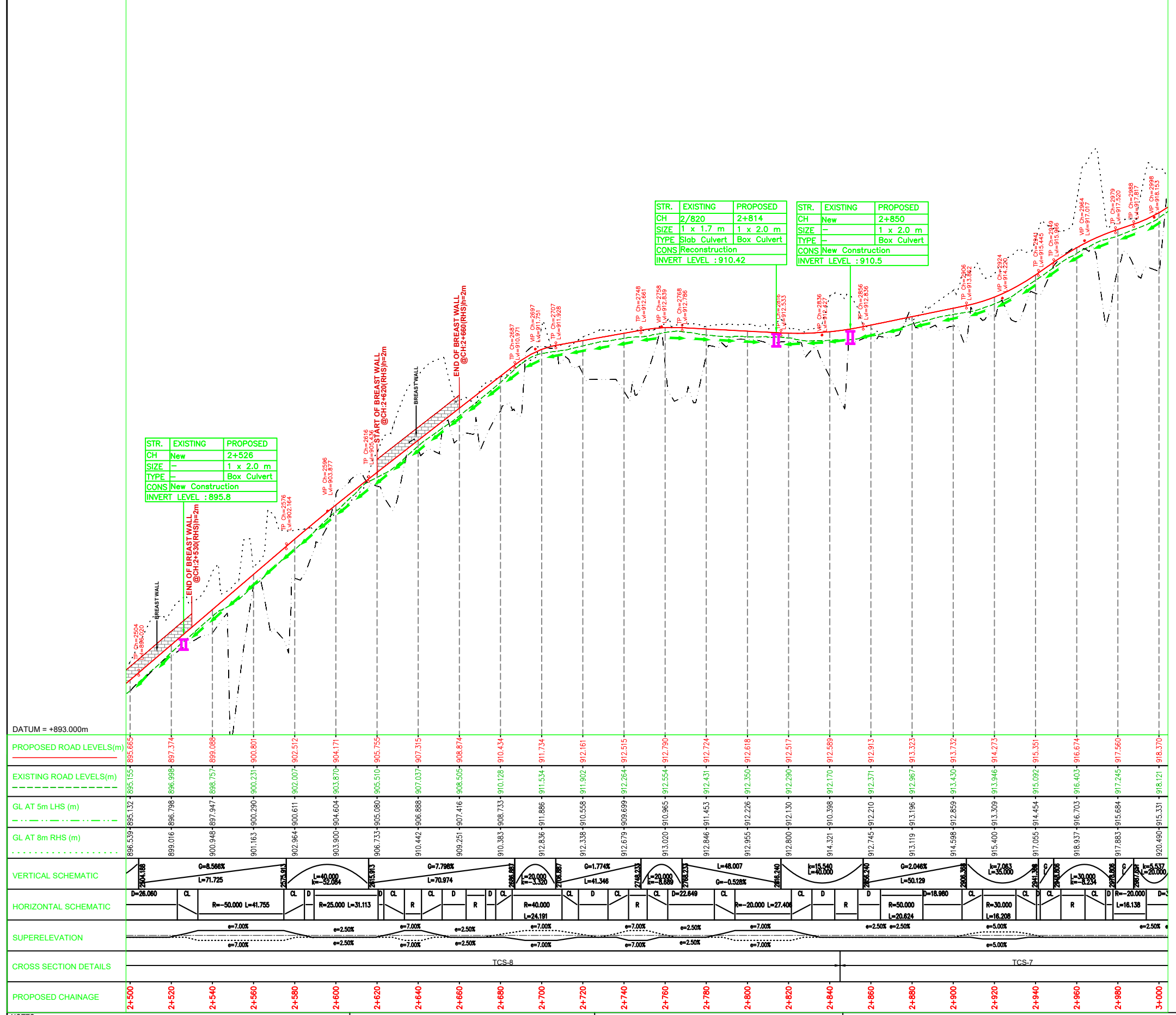
DESIGNED	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 2+500 TO CH: 3+000

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 6A OF 22B



STR.	EXISTING	PROPOSED
CH	New	2+526
SIZE	-	1 x 2.0 m
TYPE	-	Box Culvert
CONS	New Construction	
INVERT LEVEL : 895.8		

STR.	EXISTING	PROPOSED	STR.	EXISTING	PROPOSED
CH	2/820	2+814	CH	New	2+850
SIZE	1 x 1.7 m	1 x 2.0 m	SIZE	-	1 x 2.0 m
TYPE	Slab Culvert	Box Culvert	TYPE	-	Box Culvert
CONS	Reconstruction		CONS	New Construction	
INVERT LEVEL : 910.42			INVERT LEVEL : 910.5		

PROPOSED ROAD LEVELS(m)	EXISTING ROAD LEVELS(m)	GL AT 5m LHS (m)	GL AT 8m RHS (m)
895.665	895.155	895.132	896.539
897.374	896.996	896.796	899.016
899.088	898.757	899.947	900.948
900.801	900.231	900.290	901.163
902.512	902.007	902.611	902.964
904.171	903.870	904.604	903.900
905.755	905.510	905.080	906.733
907.315	907.037	906.888	910.442
908.874	908.505	907.416	909.251
910.434	910.128	910.733	910.383
911.734	911.534	911.886	912.836
912.161	911.902	910.558	912.338
912.515	912.264	912.699	912.679
912.790	912.554	912.965	913.020
912.724	912.431	912.431	912.846
912.618	912.350	912.226	912.955
912.517	912.290	912.130	912.800
912.589	912.170	912.398	914.321
912.913	912.371	912.210	912.745
913.323	912.967	912.967	913.110
913.732	913.430	912.859	914.598
914.273	913.946	913.309	915.400
915.351	915.092	914.454	917.055
916.674	916.403	916.703	918.837
917.560	917.245	917.245	917.883
918.370	918.121	918.121	920.490

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

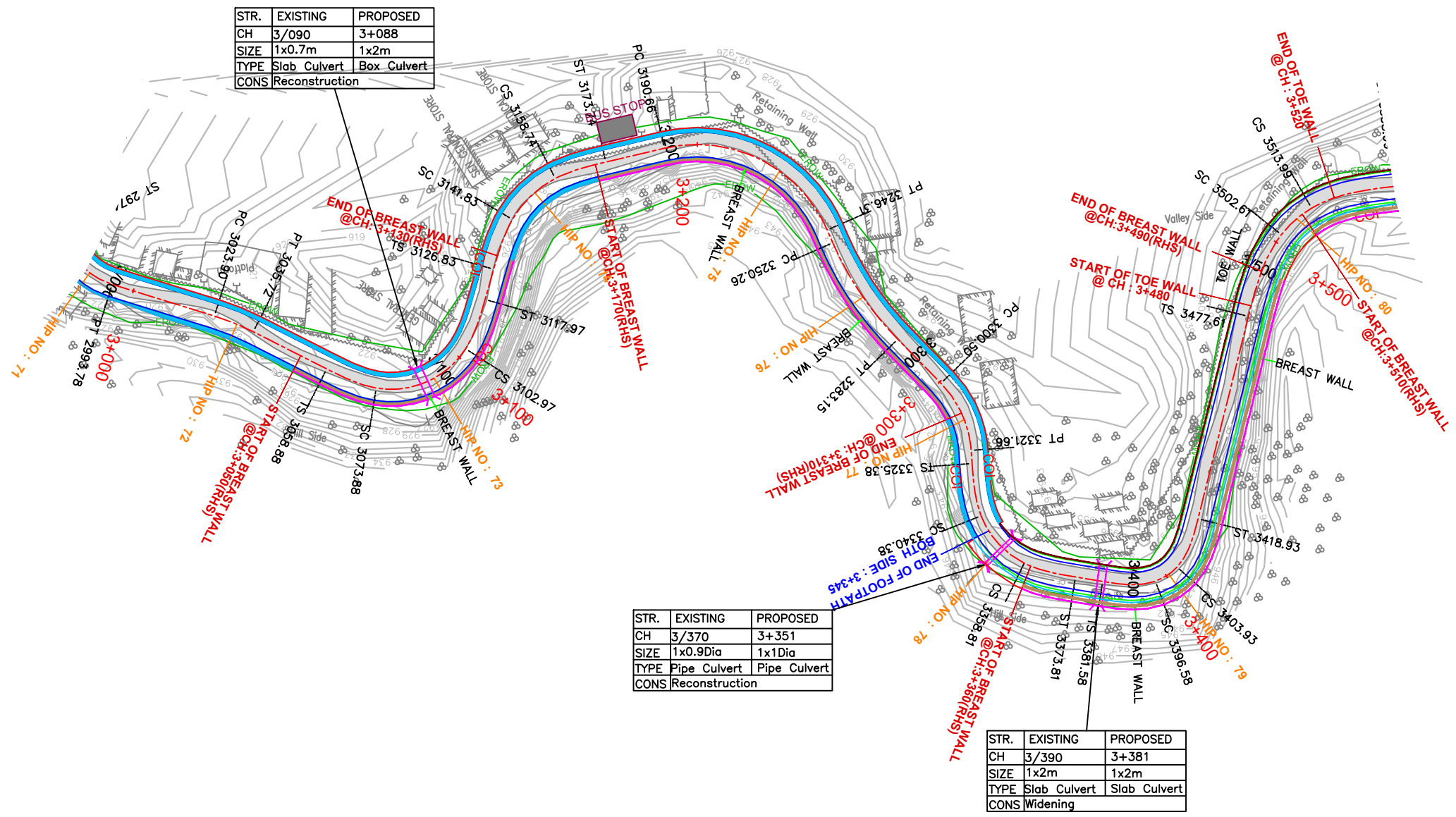
PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE :	DRAINAGE PLAN & PROFILE FROM CH: 2+500 TO CH: 3+000
DRAWN	SWAROOPA RANI	DRAWING NO :	HP/MAN-KAL/DRAINAGE P&P
CHECKED	PRANVI	ROAD NAME :	Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000
APPROVED	PRANVI		SHEET 68 OF 228

← MANDI

KALKHAR →



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 3+000 TO CH: 3+500

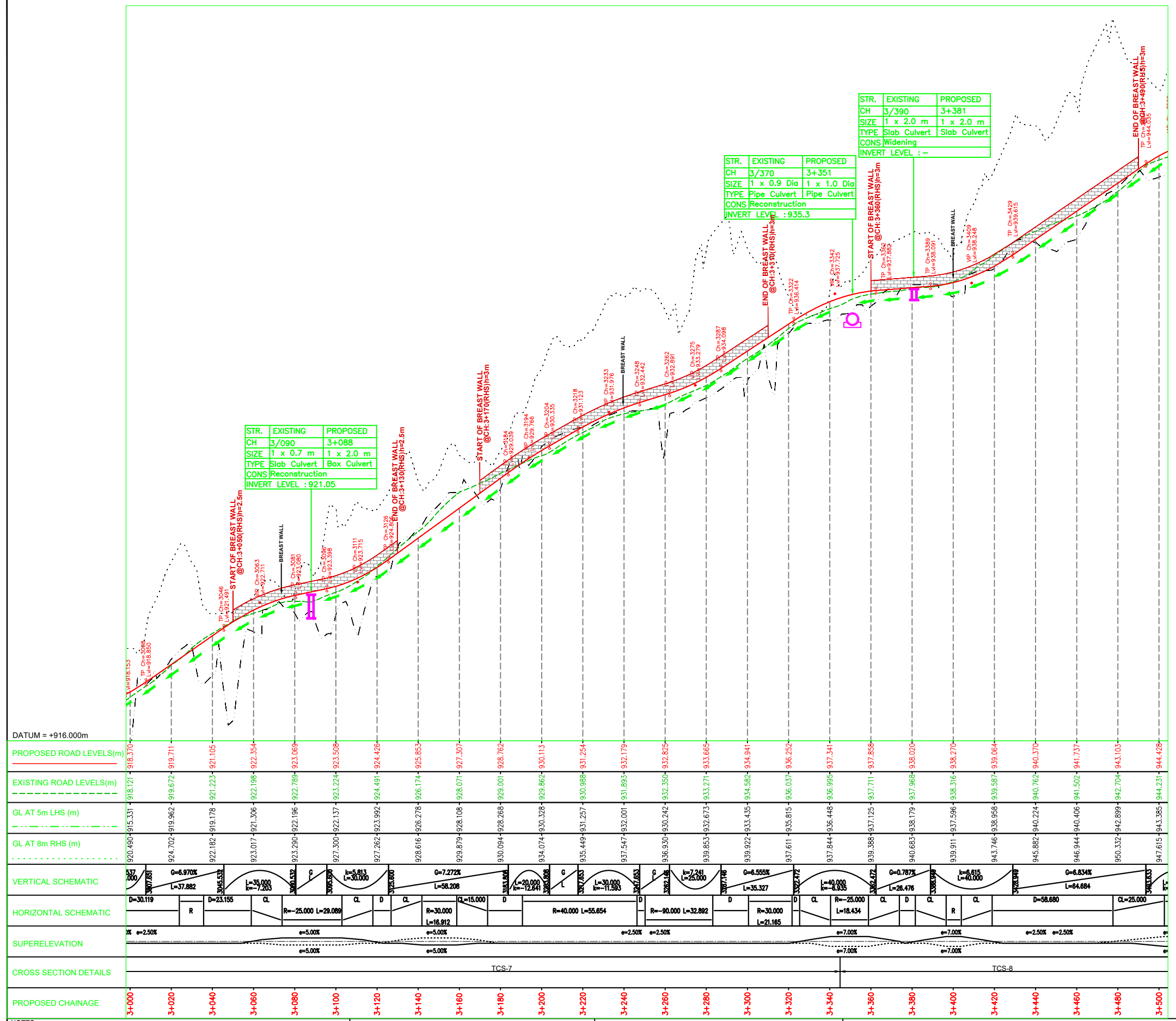
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 7A OF 22B

MANDI ←

→ KALKHAR



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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

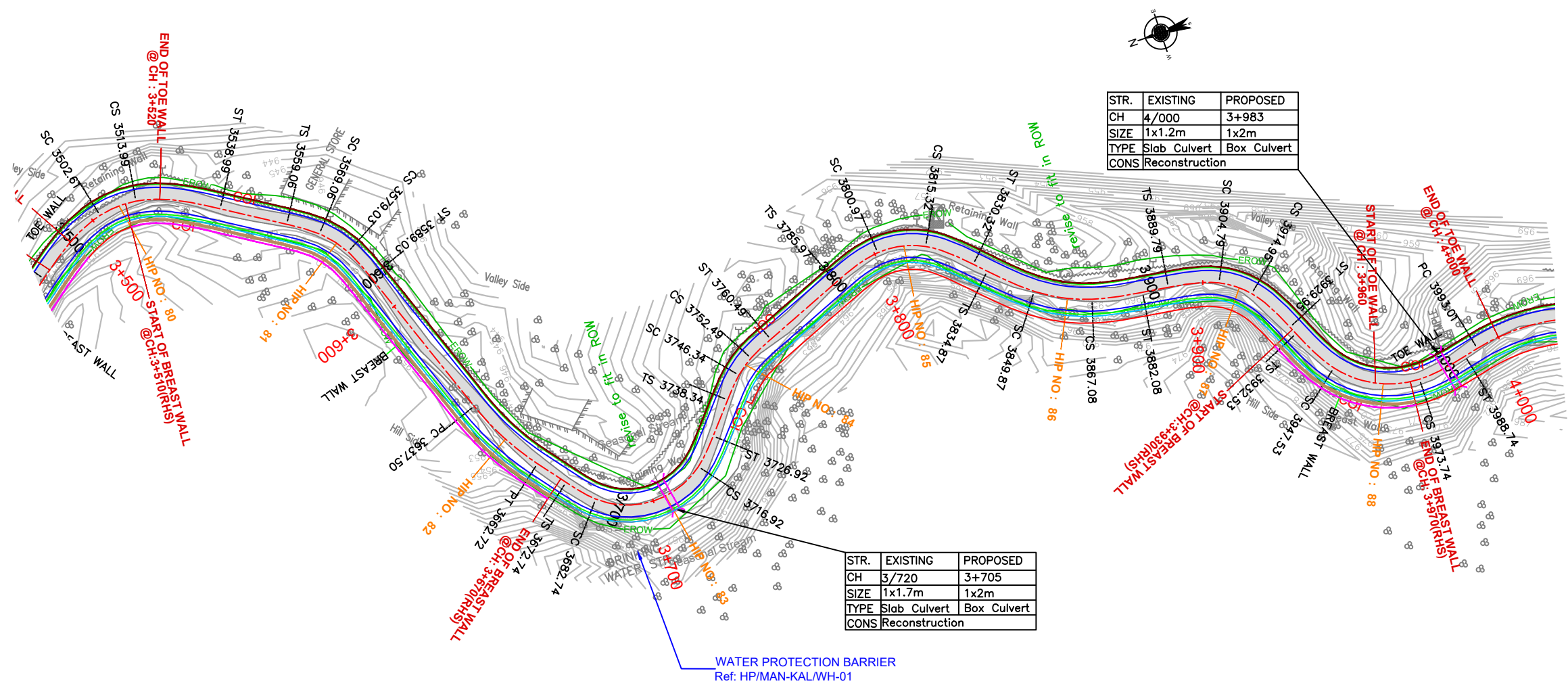
PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE :	DRAINAGE PLAN & PROFILE FROM CH: 3+000 TO CH: 3+500
DRAWN	SWAROOPA RANI	DRAWING NO :	HP/MAN-KAL/DRAINAGE P&P
CHECKED	PRANVI	ROAD NAME :	Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000
APPROVED	PRANVI		SHEET 7B OF 22B

← MANDI

KALKHAR →



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANNI
APPROVED	PRANNI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 3+500 TO CH: 4+000

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

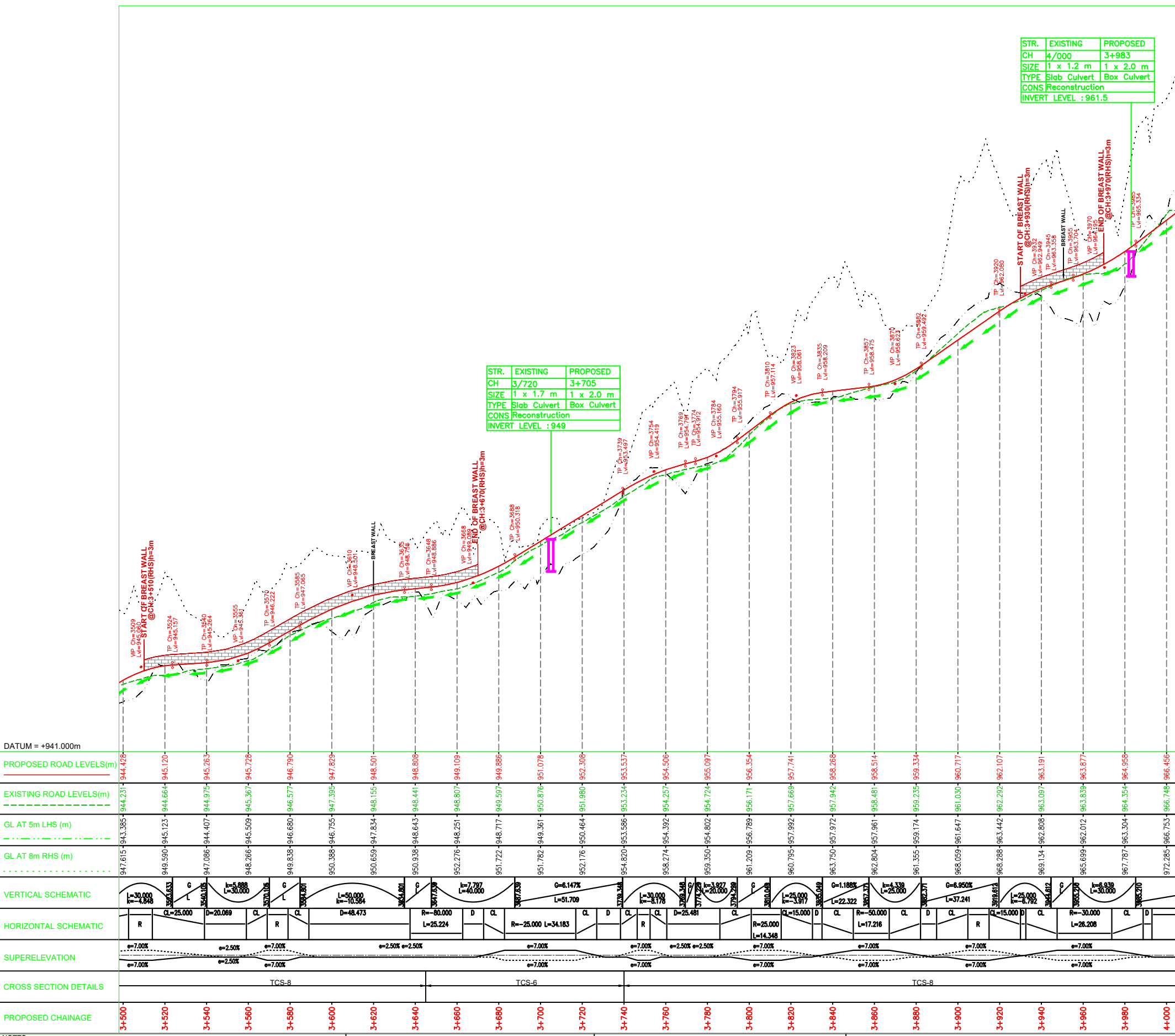
SHEET 8A OF 22B

MANDI ←

→ KALKHAR

STR.	EXISTING	PROPOSED
CH	4/000	3+983
SIZE	1 x 1.2 m	1 x 2.0 m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	
INVERT LEVEL	: 961.5	

STR.	EXISTING	PROPOSED
CH	3/720	3+705
SIZE	1 x 1.7 m	1 x 2.0 m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	
INVERT LEVEL	: 949	



DATUM = +941.000m	PROPOSED ROAD LEVELS(m)	EXISTING ROAD LEVELS(m)	GL AT 5m LHS (m)	GL AT 8m RHS (m)	VERTICAL SCHEMATIC	HORIZONTAL SCHEMATIC	SUPERELEVATION	CROSS SECTION DETAILS	PROPOSED CHAINAGE
	947.615	943.385	943.385	947.615					3+500
		949.590	945.123	949.590					3+520
		947.086	944.407	947.086					3+540
		948.266	945.509	948.266					3+560
		949.838	946.680	949.838					3+580
		950.388	947.755	950.388					3+600
		950.659	947.834	950.659					3+620
		950.938	948.643	950.938					3+640
		952.276	948.251	952.276					3+660
		951.722	948.717	951.722					3+680
		951.782	949.361	951.782					3+700
		952.176	950.464	952.176					3+720
		954.820	953.534	954.820					3+740
		958.274	954.392	958.274					3+760
		959.350	954.802	959.350					3+780
		961.209	956.171	961.209					3+800
		960.795	957.992	960.795					3+820
		963.750	957.972	963.750					3+840
		962.804	957.961	962.804					3+860
		961.355	959.174	961.355					3+880
		968.059	961.647	968.059					3+900
		968.288	963.442	968.288					3+920
		969.134	962.808	969.134					3+940
		965.699	962.012	965.699					3+960
		967.787	963.304	967.787					3+980
		972.285	966.749	972.285					4+000

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

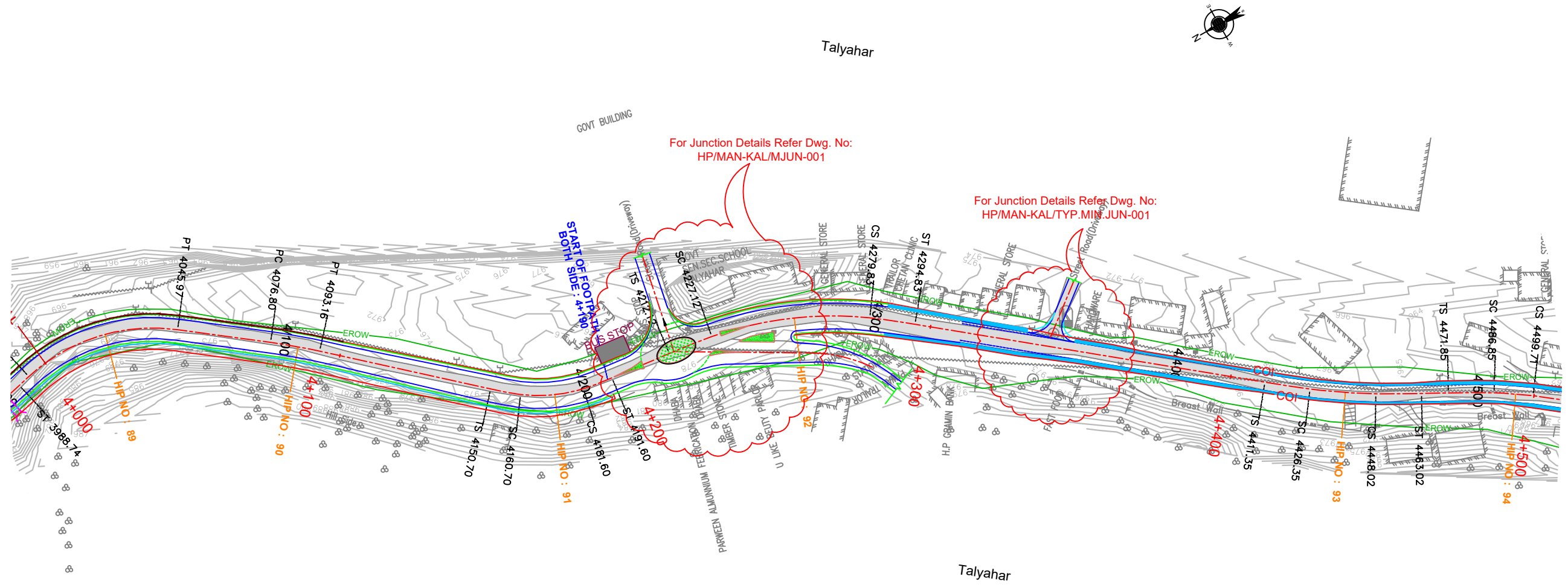
PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE :	DRAINAGE PLAN & PROFILE FROM CH: 3+500 TO CH: 4+000
DRAWN	SWAROOPA RANI	DRAWING NO :	HP/MAN-KAL/DRAINAGE P&P
CHECKED	PRANVI	ROAD NAME :	Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000
APPROVED	PRANVI	SHEET	88 OF 228

← MANDI

KALKHAR →



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANNI
APPROVED	PRANNI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 4+000 TO CH: 4+500

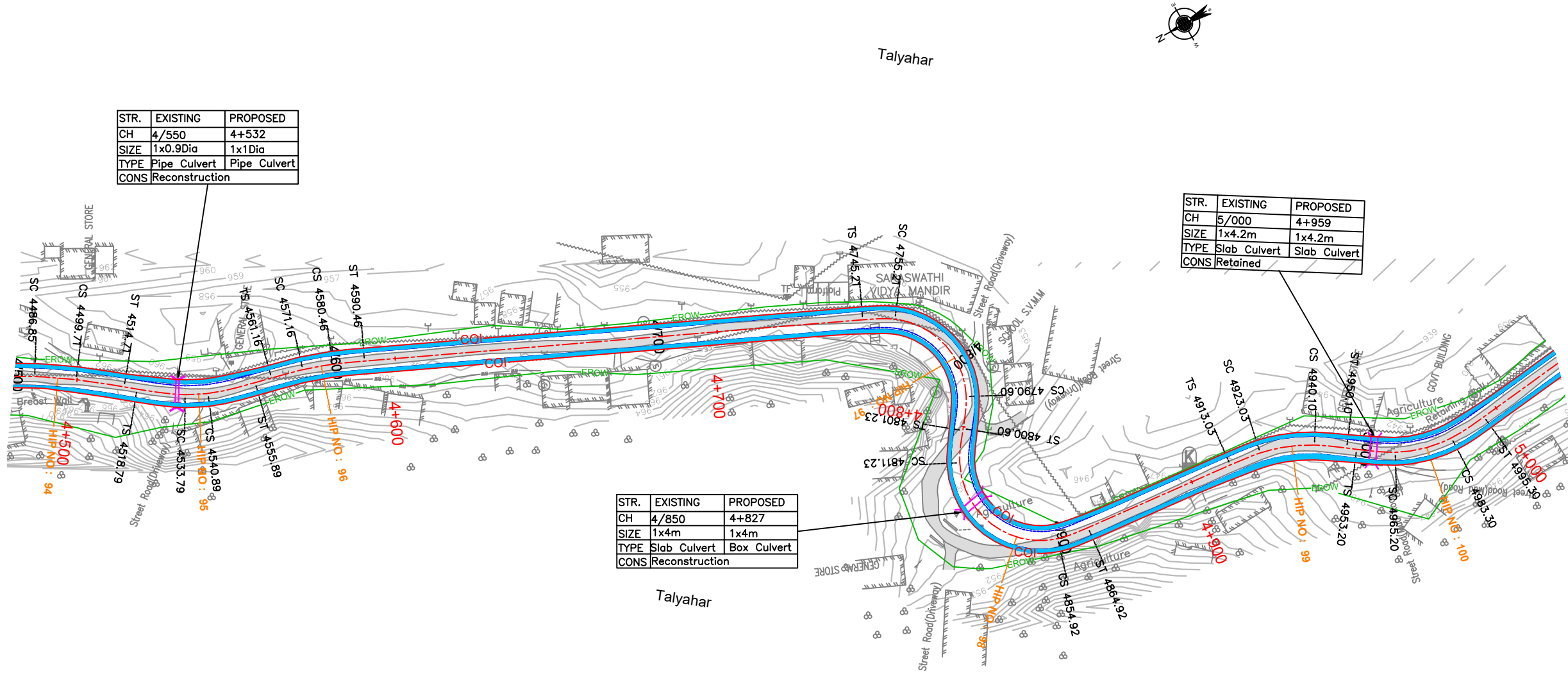
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 9A OF 22B

← MANDI

KALKHAR →



STR.	EXISTING	PROPOSED
CH	4/550	4+532
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	5/000	4+959
SIZE	1x4.2m	1x4.2m
TYPE	Slab Culvert	Slab Culvert
CONS	Retained	

STR.	EXISTING	PROPOSED
CH	4/850	4+827
SIZE	1x4m	1x4m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED



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

PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANNI
APPROVED	PRANNI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 4+500 TO CH: 5+000
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

← MANDI

KALKHAR →

STR.	EXISTING	PROPOSED
CH	New	5+201
SIZE	-	1x1Dia
TYPE	-	Pipe Culvert
CONS	New Construction	



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 5+000 TO CH: 5+500

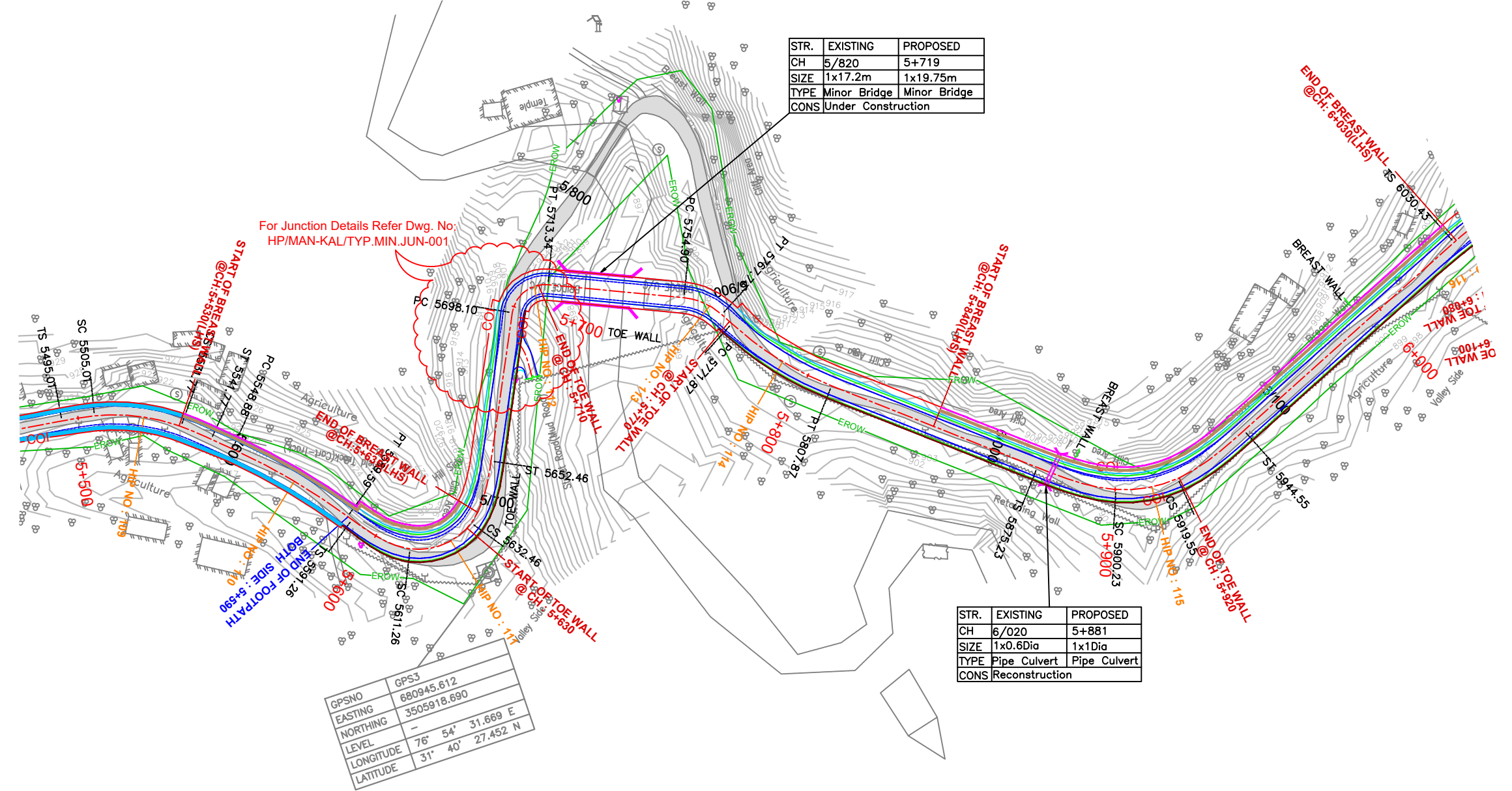
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 11A OF 22B

← MANDI

KALKHAR →



STR.	EXISTING	PROPOSED
CH	5/820	5+719
SIZE	1x17.2m	1x19.75m
TYPE	Minor Bridge	Minor Bridge
CONS		Under Construction

STR.	EXISTING	PROPOSED
CH	6/020	5+881
SIZE	1x0.6Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS		Reconstruction

GPSNO	GPS3
EASTING	680945.612
NORTHING	3505918.690
LEVEL	76° 54' 31.669 E
LONGITUDE	31° 40' 27.452 N
LATITUDE	

For Junction Details Refer Dwg. No.
HP/MAN-KAL/TYP.MIN.JUN-001

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

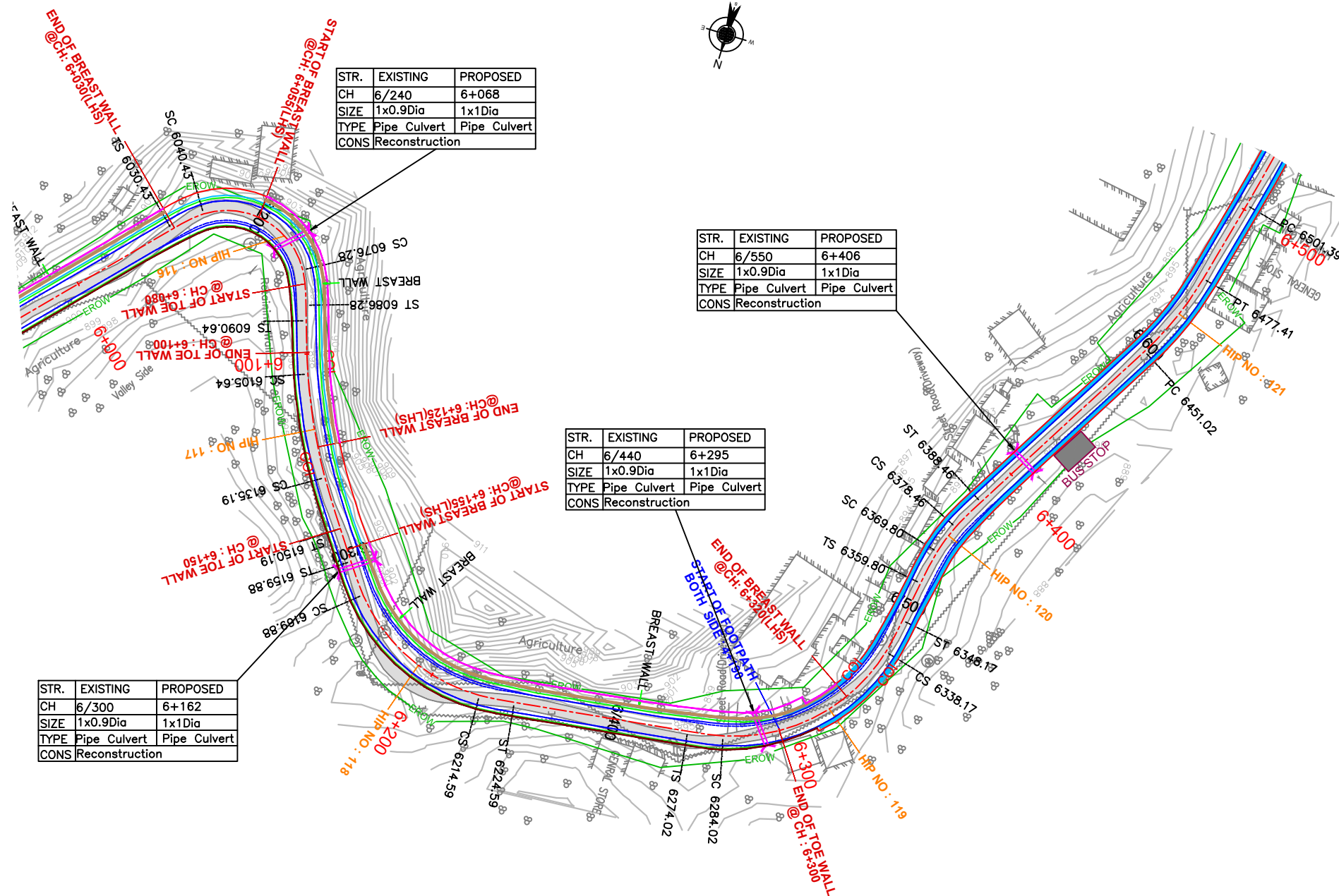
DESIGNED	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANNI
APPROVED	PRANNI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 5+500 TO CH: 6+000

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 12A OF 22B



STR.	EXISTING	PROPOSED
CH	6/240	6+068
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS		Reconstruction

STR.	EXISTING	PROPOSED
CH	6/550	6+406
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS		Reconstruction

STR.	EXISTING	PROPOSED
CH	6/440	6+295
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS		Reconstruction

STR.	EXISTING	PROPOSED
CH	6/300	6+162
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS		Reconstruction

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

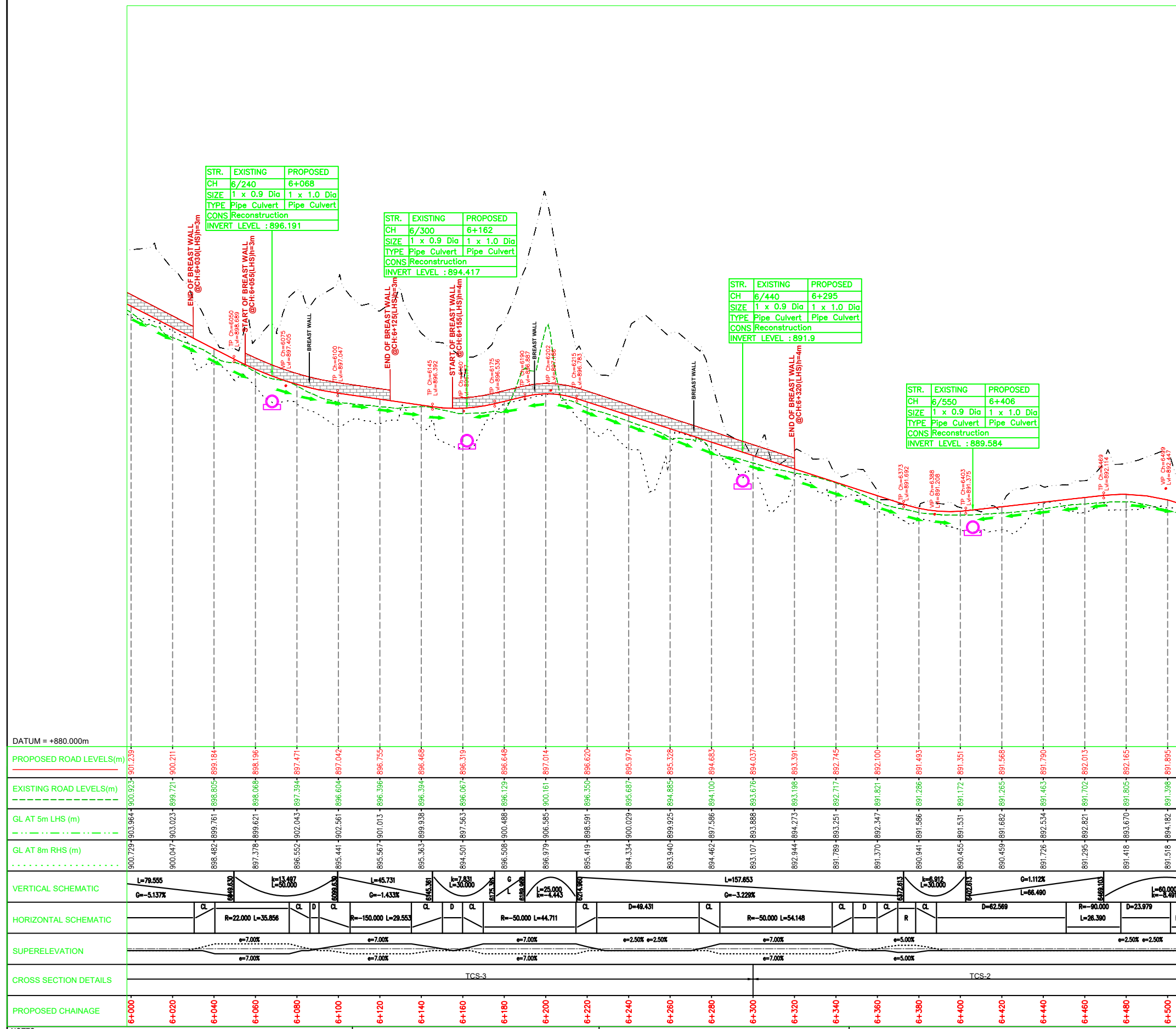
PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE : DRAINAGE PLAN & PROFILE FROM CH: 6+000 TO CH: 6+500
DRAWN	SWAROOPA RANI	
CHECKED	PRANVI	
APPROVED	PRANVI	DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
		ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

MANDI ←

→ KALKHAR



STR.	EXISTING	PROPOSED
CH	6/240	6+068
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL : 896.191		

STR.	EXISTING	PROPOSED
CH	6/300	6+162
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL : 894.417		

STR.	EXISTING	PROPOSED
CH	6/440	6+295
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL : 891.9		

STR.	EXISTING	PROPOSED
CH	6/550	6+406
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL : 889.584		

PROPOSED ROAD LEVELS (m)	EXISTING ROAD LEVELS (m)	GL AT 5m LHS (m)	GL AT 8m RHS (m)
900.239	900.923	903.964	900.729
899.211	899.721	903.023	900.047
899.184	898.803	898.761	898.482
898.196	898.069	898.621	897.378
897.471	897.394	897.043	896.552
897.042	896.604	897.561	895.441
896.755	896.394	896.103	895.567
896.468	896.394	895.938	895.363
896.319	896.067	895.563	894.501
896.648	896.129	896.488	896.508
897.014	900.161	896.585	896.979
896.620	896.350	896.591	895.419
895.974	895.687	895.029	894.334
895.328	894.885	894.925	893.940
894.663	894.100	894.586	894.462
894.037	893.676	893.886	893.107
893.391	893.196	894.273	892.944
892.745	892.717	893.251	891.789
892.100	891.821	892.347	891.370
891.493	891.286	891.586	890.941
891.351	891.172	891.531	890.455
891.568	891.265	891.682	890.459
891.790	891.463	892.534	891.726
892.013	891.702	892.821	891.295
892.165	891.805	893.670	891.418
891.895	891.396	894.182	891.518

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

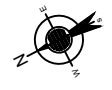
PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE :	DRAINAGE PLAN & PROFILE FROM CH: 6+000 TO CH: 6+500
DRAWN	SWAROOPA RANI		DRAWING NO :
CHECKED	PRANVI	ROAD NAME :	
APPROVED	PRANVI		SHEET 13B OF 22B

← MANDI

KALKHAR →

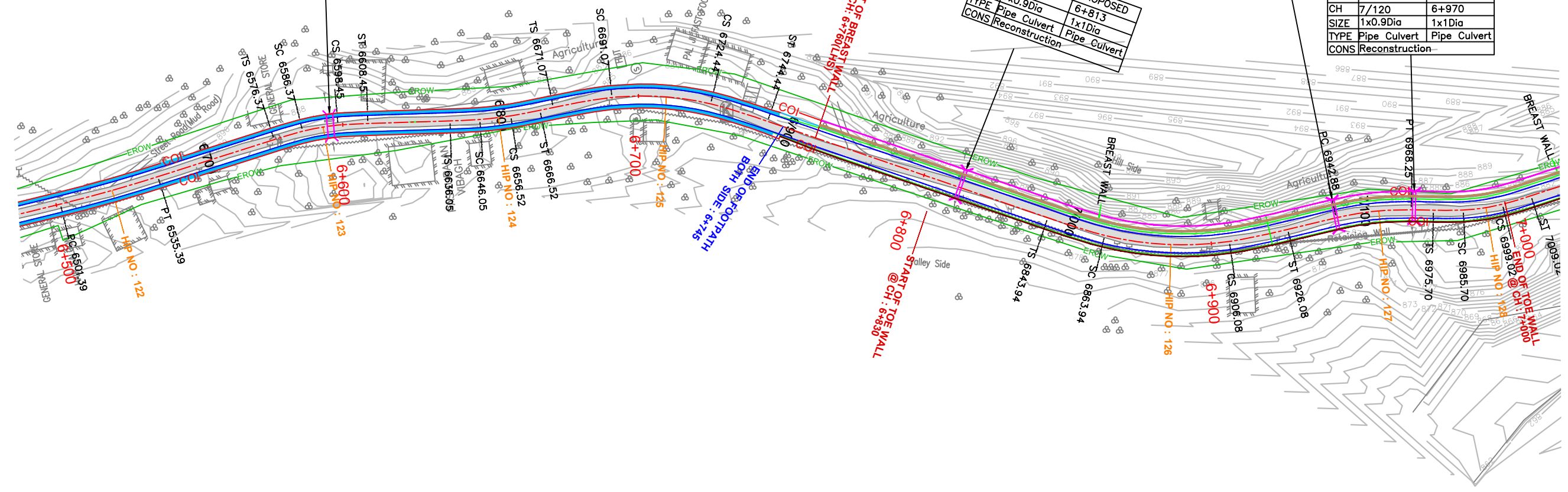


STR.	EXISTING	PROPOSED
CH	6/745	6+597
SIZE	1x1.2m	1x2m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	New	6+943
SIZE	-	1x1Dia
TYPE	-	Pipe Culvert
CONS	New Construction	

STR.	EXISTING	PROPOSED
CH	7/120	6+970
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	6/960	6+813
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 6+500 TO CH: 7+000

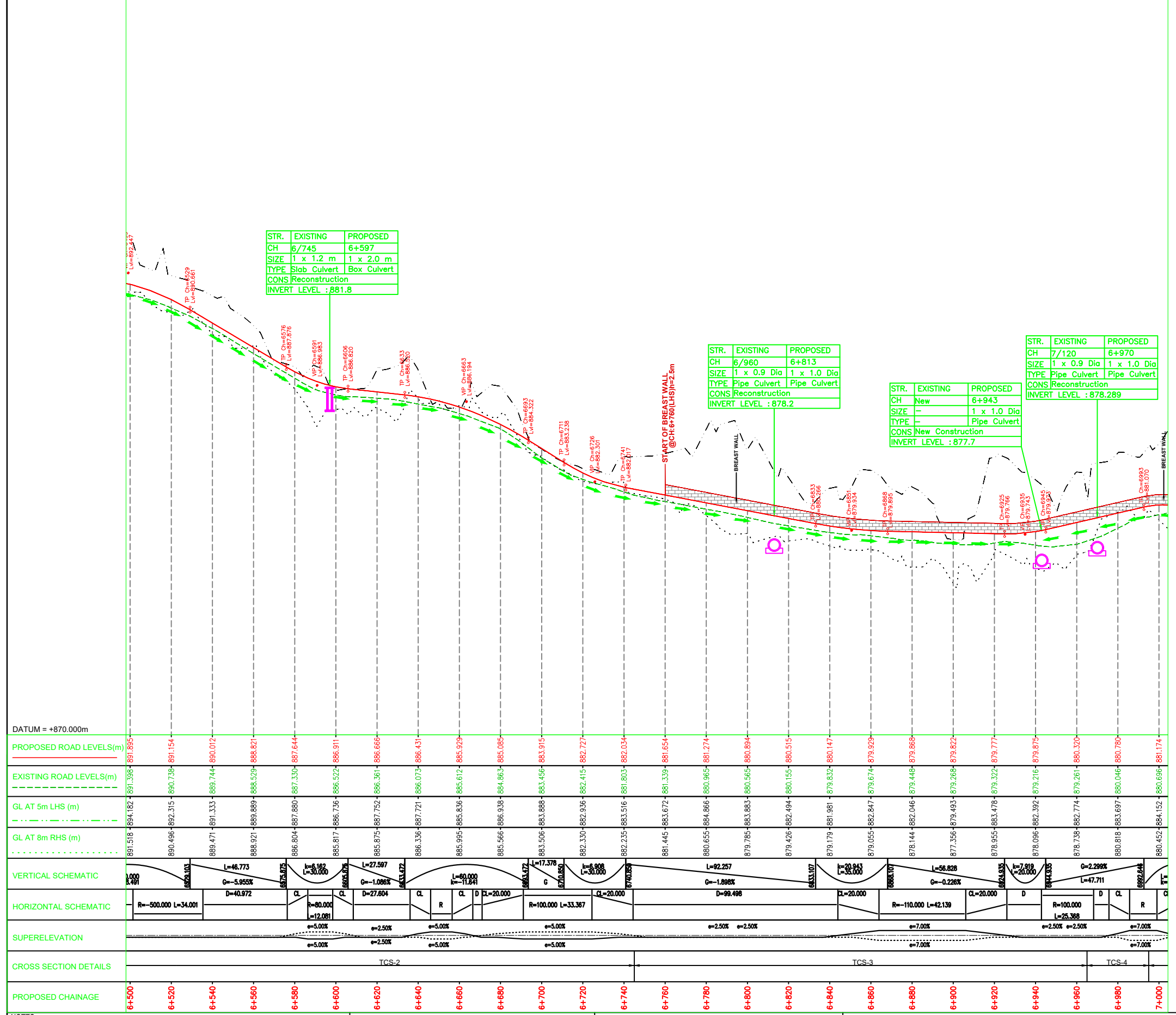
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 14A OF 22B

MANDI ←

→ KALKHAR



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

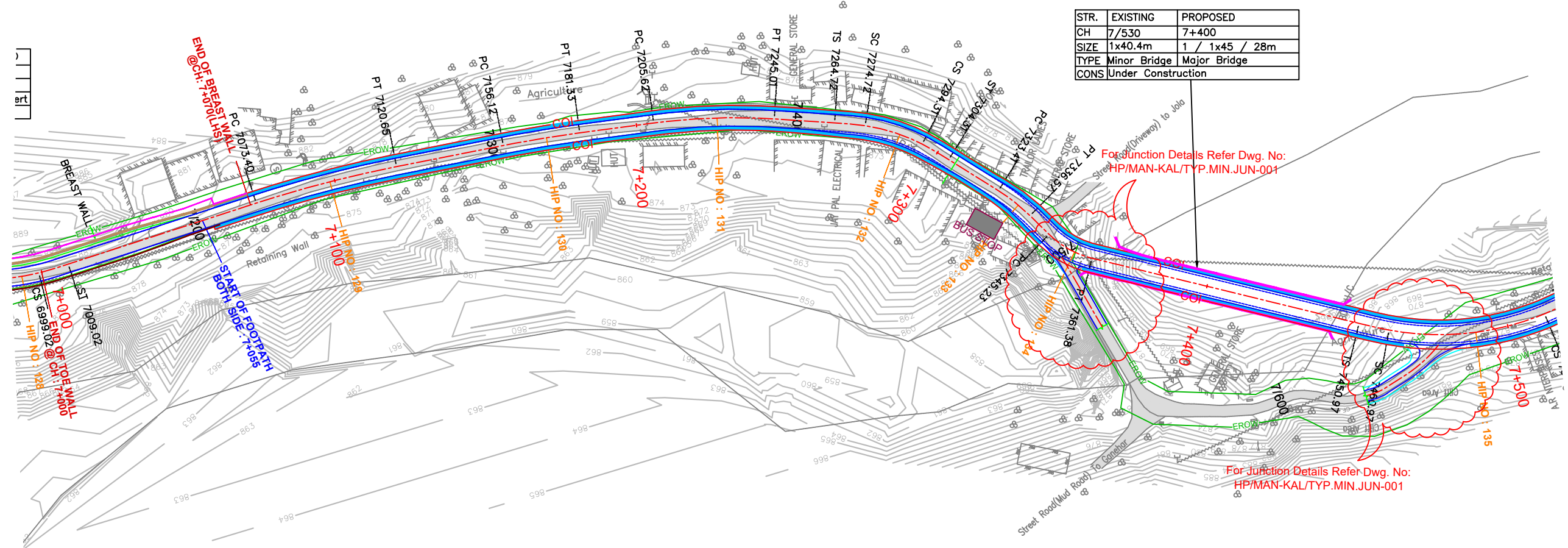
PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE :	DRAINAGE PLAN & PROFILE FROM CH: 6+500 TO CH: 7+000
DRAWN	SWAROOPA RANI	DRAWING NO :	HP/MAN-KAL/DRAINAGE P&P
CHECKED	PRANVI	ROAD NAME :	Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000
APPROVED	PRANVI		SHEET 14B OF 22B

MANDI ←

→ KALKHAR



STR.	EXISTING	PROPOSED
CH	7/530	7+400
SIZE	1x40.4m	1 / 1x45 / 28m
TYPE	Minor Bridge	Major Bridge
CONS	Under Construction	

For Junction Details Refer Dwg. No: HP/MAN-KAL/TYP.MIN.JUN-001

For Junction Details Refer Dwg. No: HP/MAN-KAL/TYP.MIN.JUN-001

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED



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

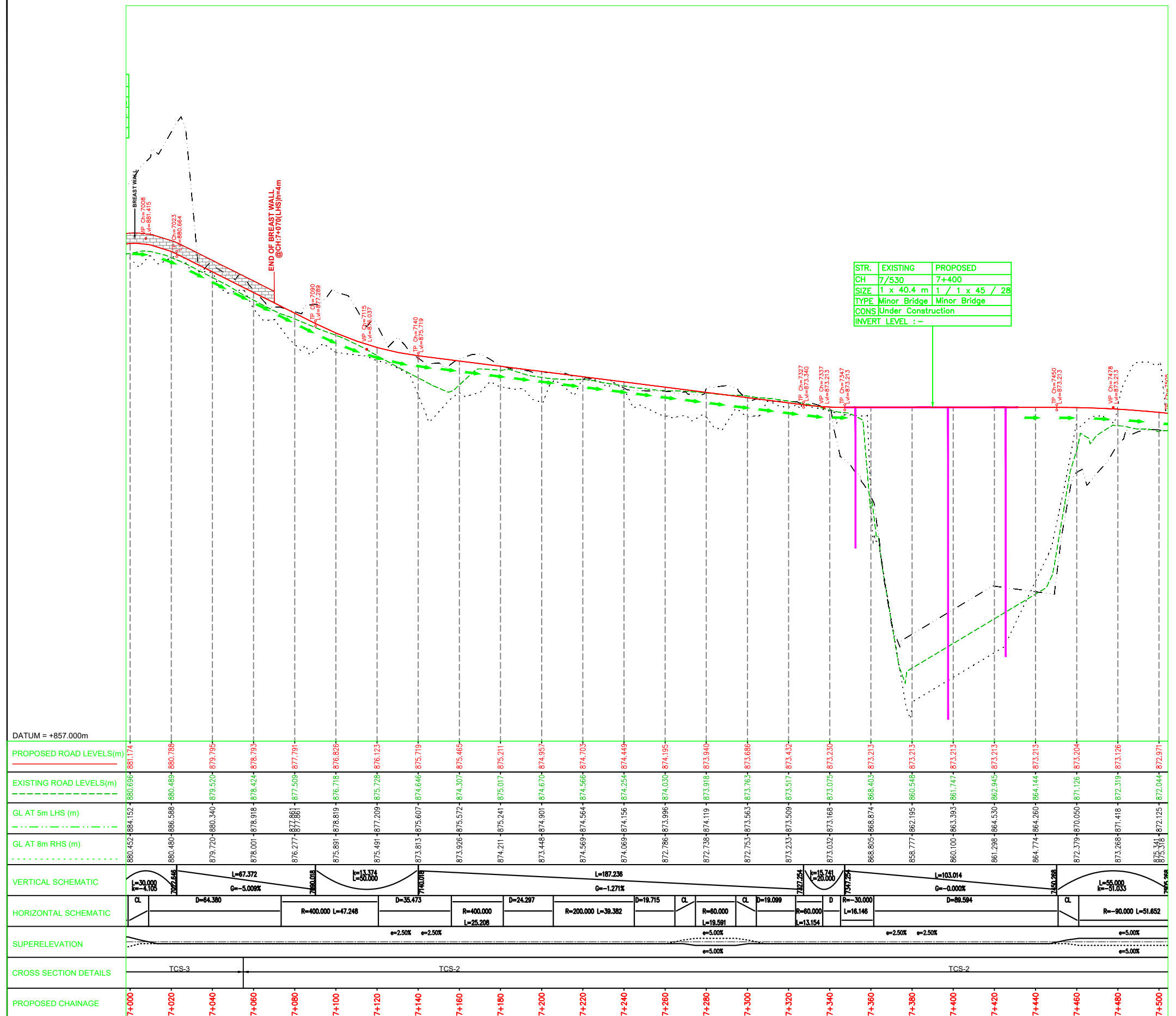
PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 7+000 TO CH: 7+500
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

C:\Users\satyanarayana\appdata\local\temp\AcPublish_12556\MOR-26 PnP 2020 12 28 P5.dwg



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

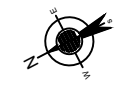
PROJECT: Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE : DRAINAGE PLAN & PROFILE FROM CH: 7+000 TO CH: 7+500
DRAWN	SWAROOPA RANI	
CHECKED	PRANVI	DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
APPROVED	PRANVI	ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

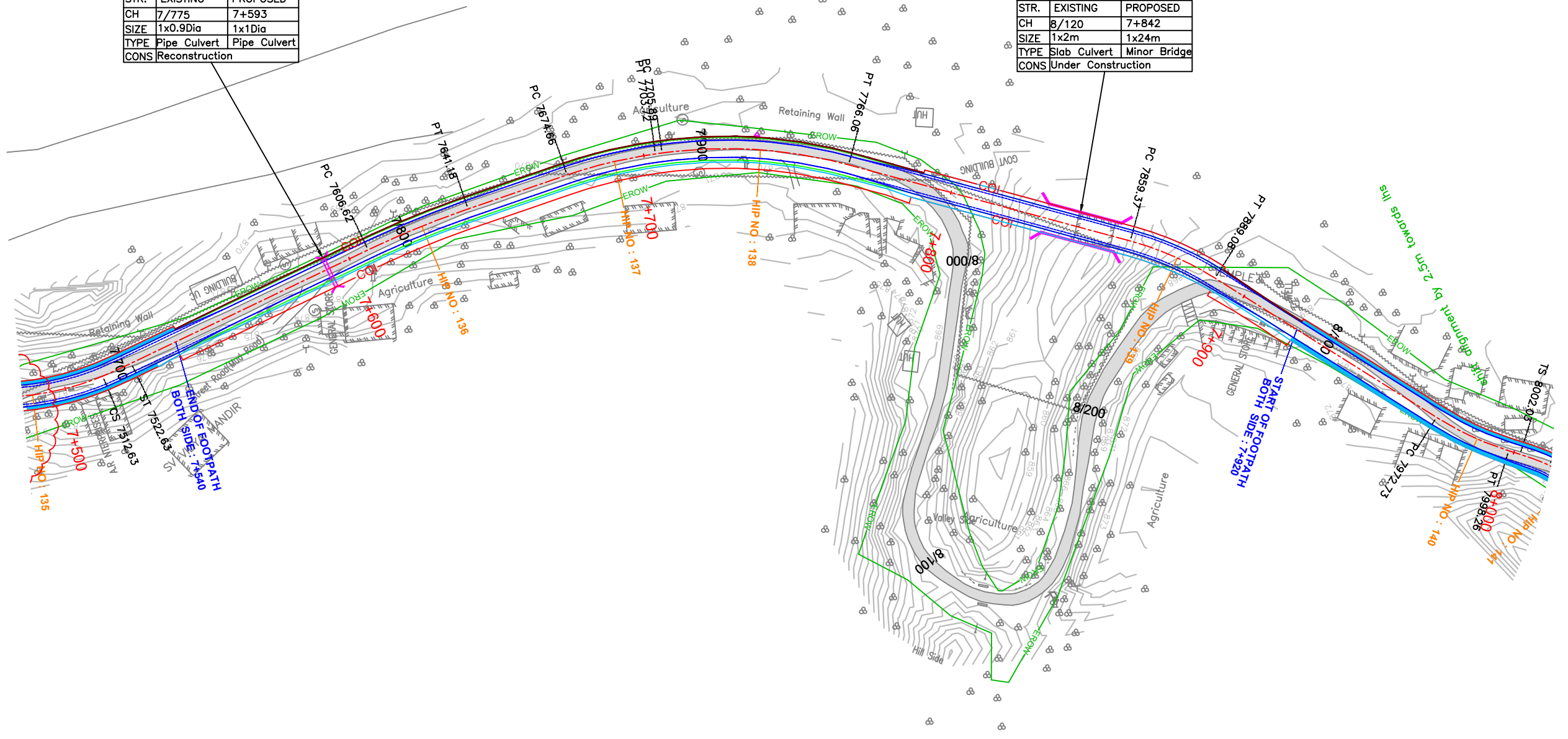
← MANDI

KALKHAR →



STR.	EXISTING	PROPOSED
CH	7/775	7+593
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	8/120	7+842
SIZE	1x2m	1x24m
TYPE	Slab Culvert	Minor Bridge
CONS	Under Construction	



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANNI
APPROVED	PRANNI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 7+500 TO CH: 8+000

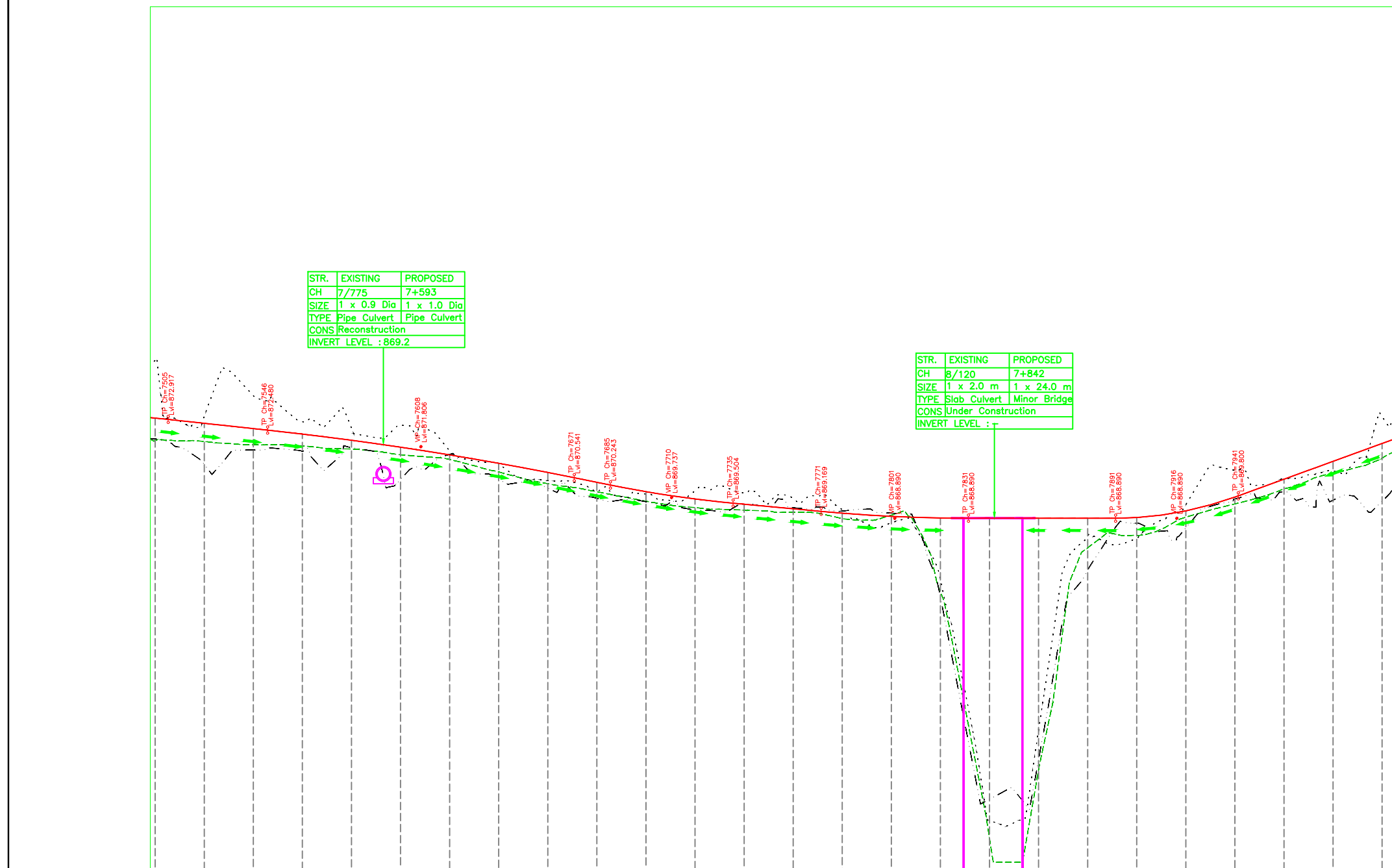
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 16A OF 22B

STR.	EXISTING	PROPOSED
CH	7/775	7+593
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL	: 869.2	

STR.	EXISTING	PROPOSED
CH	8/120	7+842
SIZE	1 x 2.0 m	1 x 24.0 m
TYPE	Slab Culvert	Minor Bridge
CONS	Under Construction	
INVERT LEVEL	:	



	7+500	7+520	7+540	7+560	7+580	7+600	7+620	7+640	7+660	7+680	7+700	7+720	7+740	7+760	7+780	7+800	7+820	7+840	7+860	7+880	7+900	7+920	7+940	7+960	7+980	8+000		
DATUM = +854.000m																												
PROPOSED ROAD LEVELS(m)	872.044	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016		
EXISTING ROAD LEVELS(m)	872.044	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016	872.016		
GL AT 5m LHS (m)	872.125	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044		
GL AT 8m RHS (m)	872.316	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044	873.044		
VERTICAL SCHEMATIC	[Vertical curve data including lengths (L), grades (G), and elevations]																											
HORIZONTAL SCHEMATIC	[Horizontal curve data including radii (R), lengths (L), and deflection angles (D)]																											
SUPERELEVATION	[Superelevation data showing transition from 2.50% to 2.50%]																											
CROSS SECTION DETAILS	[Cross-section details showing TCS-2 and TCS-3 sections]																											
PROPOSED CHAINAGE	7+500	7+520	7+540	7+560	7+580	7+600	7+620	7+640	7+660	7+680	7+700	7+720	7+740	7+760	7+780	7+800	7+820	7+840	7+860	7+880	7+900	7+920	7+940	7+960	7+980	8+000		

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 7+500 TO CH: 8+000

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 16B OF 22B

TENDER PURPOSE ONLY

← MANDI

KALKHAR →



STR.	EXISTING	PROPOSED
CH	8/440	8+070
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	8/820	8+444
SIZE	2x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

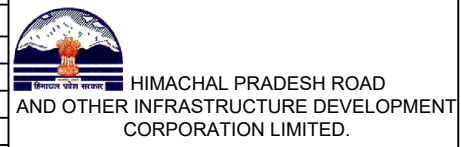
STR.	EXISTING	PROPOSED
CH	8/860	8+492
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

GPSNO	GPS4
EASTING	679421.204
NORTHING	3504203.747
LEVEL	
LONGITUDE	76° 53' 32.675 E
LATITUDE	31° 39' 32.644 N

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED



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

PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

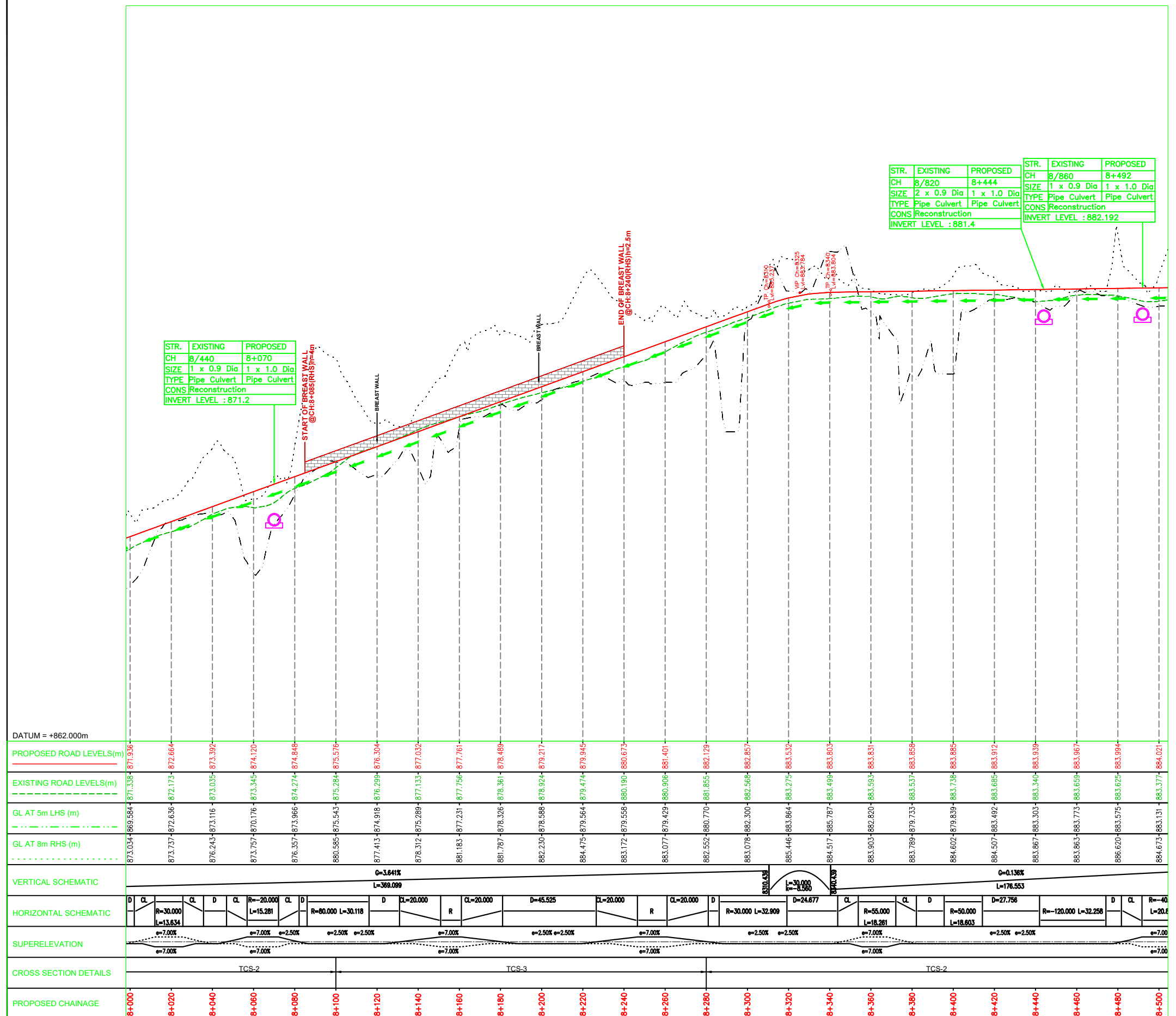
DESIGNED	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 8+000 TO CH: 8+500

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 17A OF 22B



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

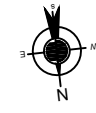
PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE : DRAINAGE PLAN & PROFILE FROM CH: 8+000 TO CH: 8+500
DRAWN	SWAROOPA RANI	
CHECKED	PRANVI	DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
APPROVED	PRANVI	ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

← MANDI

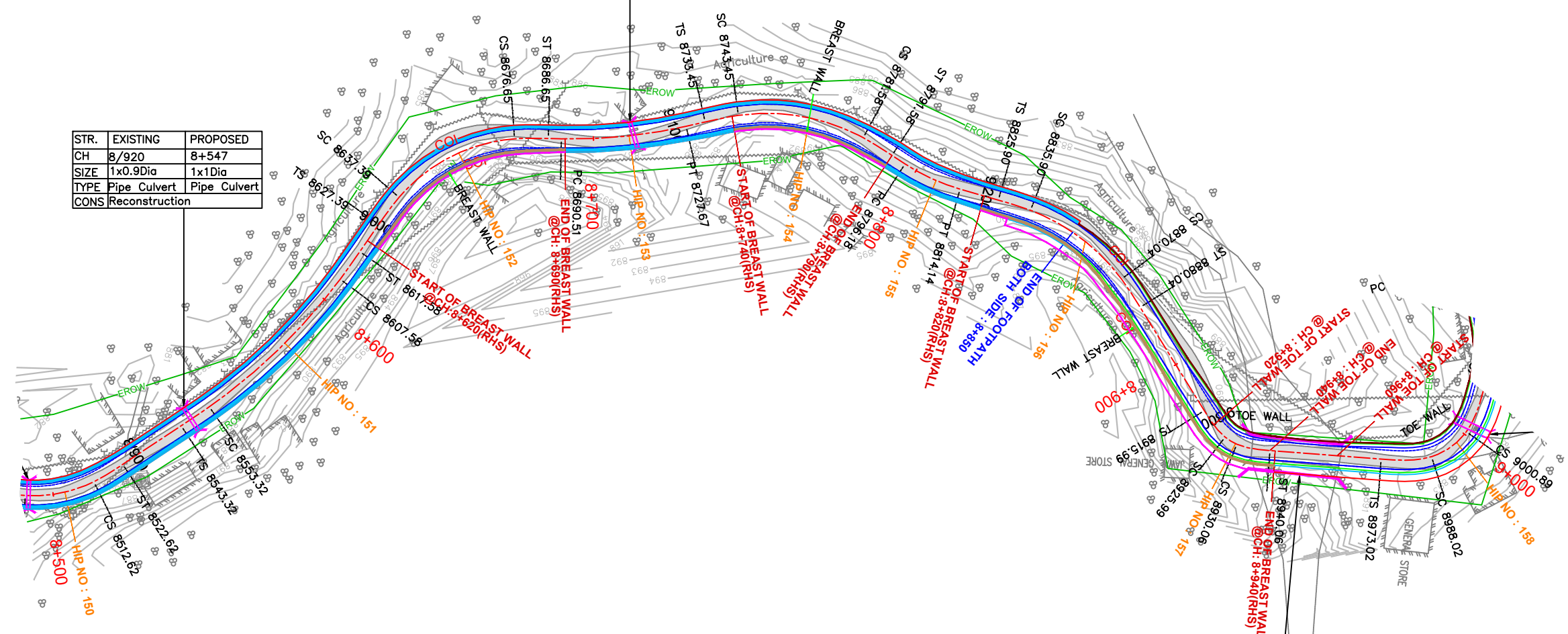
KALKHAR →



STR.	EXISTING	PROPOSED
CH	9/090	8+713
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	8/920	8+547
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	9/325	8+948
SIZE	1x21.3m	1x21.3m
TYPE	Minor Bridge	Minor Bridge
CONS	Widening	



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED



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

PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

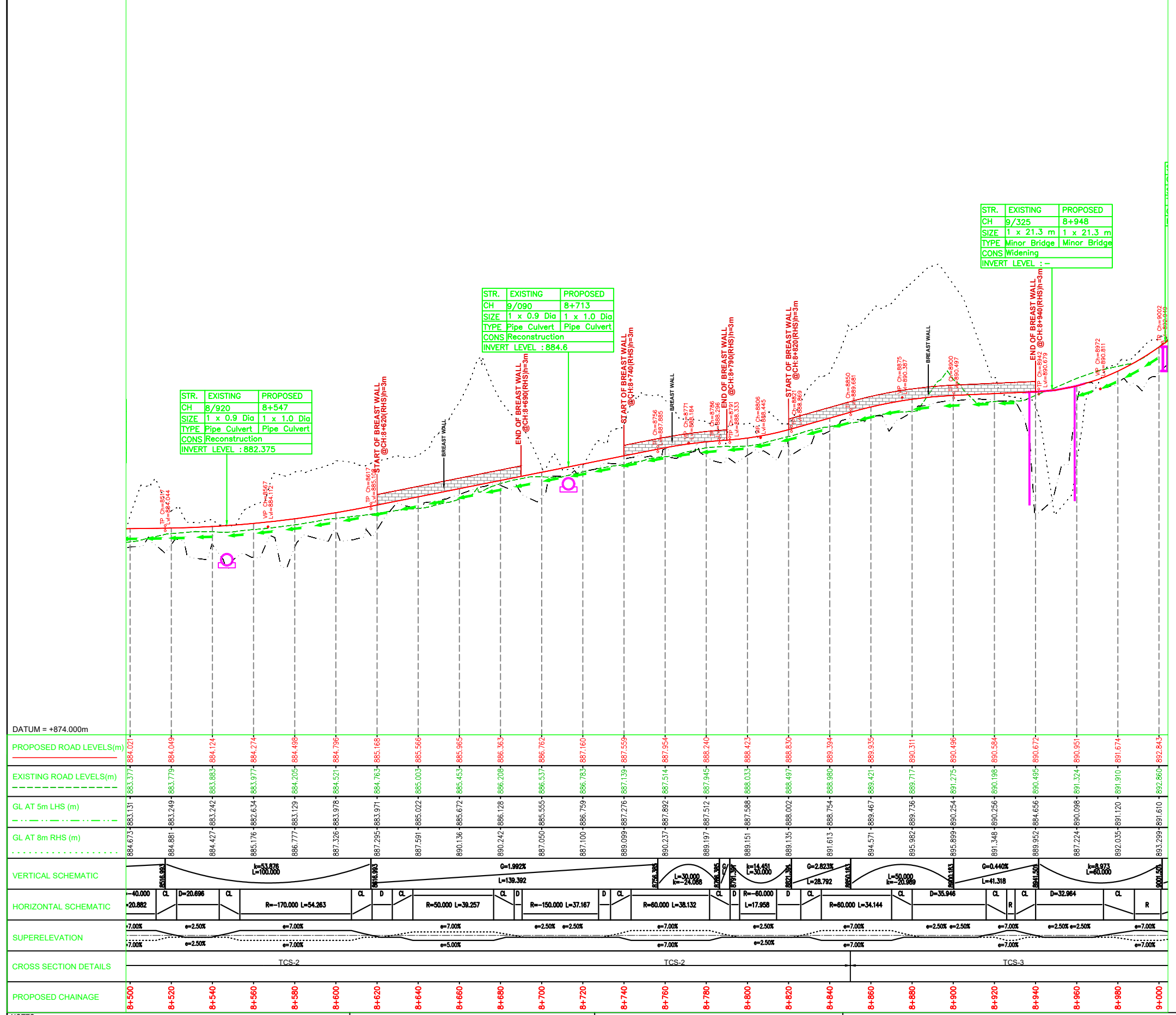
SCALE: NOT TO SCALE

DESIGNED	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 8+500 TO CH: 9+000
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

MANDI ←

→ KALKHAR



STR.	EXISTING	PROPOSED
CH	9/325	8+948
SIZE	1 x 21.3 m	1 x 21.3 m
TYPE	Minor Bridge	Minor Bridge
CONS	Widening	
INVERT LEVEL	-	-

STR.	EXISTING	PROPOSED
CH	9/090	8+713
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL	884.6	

STR.	EXISTING	PROPOSED
CH	8/920	8+547
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL	882.375	

DATUM = +874.000m

	8+500	8+520	8+540	8+560	8+580	8+600	8+620	8+640	8+660	8+680	8+700	8+720	8+740	8+760	8+780	8+800	8+820	8+840	8+860	8+880	8+900	8+920	8+940	8+960	8+980	9+000		
PROPOSED ROAD LEVELS(m)	884.02	884.049	884.124	884.274	884.498	884.796	885.168	885.566	885.965	886.363	886.762	887.160	887.559	887.954	888.240	888.423	888.630	888.934	889.335	889.736	890.137	890.538	890.939	891.340	891.741	892.142	892.543	
EXISTING ROAD LEVELS(m)	883.377	883.779	883.883	883.977	884.205	884.498	884.763	885.003	885.453	886.209	886.537	887.139	887.514	887.954	887.945	888.033	888.497	888.907	889.421	889.935	890.449	890.963	891.477	891.991	892.505	893.019	893.533	
GL AT 5m LHS (m)	884.673	884.681	884.427	885.176	886.777	887.326	887.295	887.591	890.136	890.242	887.050	887.100	889.099	890.237	889.197	889.151	889.135	891.613	894.571	895.982	895.899	891.348	889.952	887.224	882.035	883.299	884.500	
GL AT 8m RHS (m)	884.673	884.681	884.427	885.176	886.777	887.326	887.295	887.591	890.136	890.242	887.050	887.100	889.099	890.237	889.197	889.151	889.135	891.613	894.571	895.982	895.899	891.348	889.952	887.224	882.035	883.299	884.500	
VERTICAL SCHEMATIC	[Vertical curve diagrams showing grades and lengths]																											
HORIZONTAL SCHEMATIC	[Horizontal curve diagrams showing radii and lengths]																											
SUPERELEVATION	[Superelevation diagrams showing cross-slopes]																											
CROSS SECTION DETAILS	TCS-2										TCS-2										TCS-3							
PROPOSED CHAINAGE	[Chainage markers from 8+500 to 9+000]																											

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 8+500 TO CH: 9+000

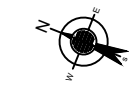
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 18B OF 22B

MANDI ←

→ KALKHAR

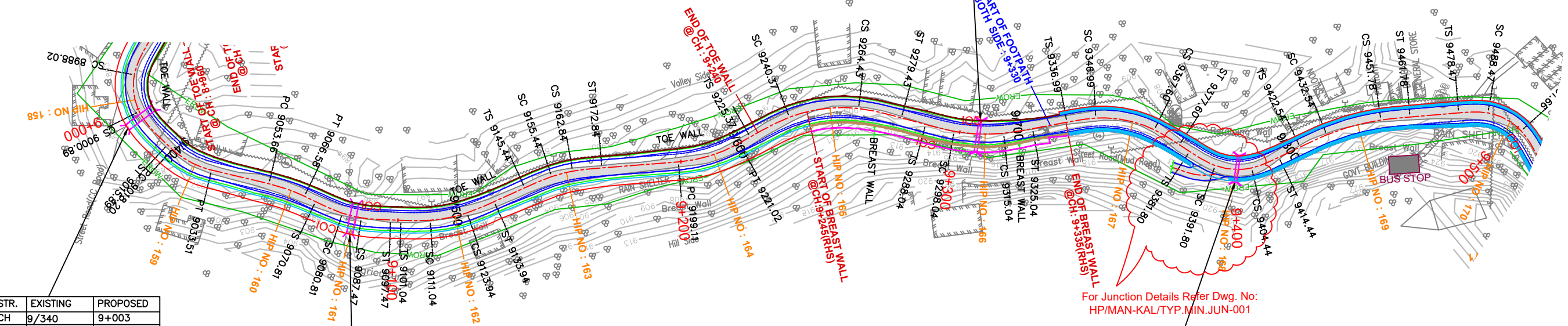


STR.	EXISTING	PROPOSED
CH	9/680	9+307
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	9/340	9+003
SIZE	1x1.2m	1x2m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	9/470	9+085
SIZE	1x0.7m	1x2m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	

STR.	EXISTING	PROPOSED
CH	9/780	9+400
SIZE	1x0.9Dia	1x0.9Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Retained	



For Junction Details Refer Dwg. No: HP/MAN-KAL/TYP.MIN.JUN-001

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 9+000 TO CH: 9+500

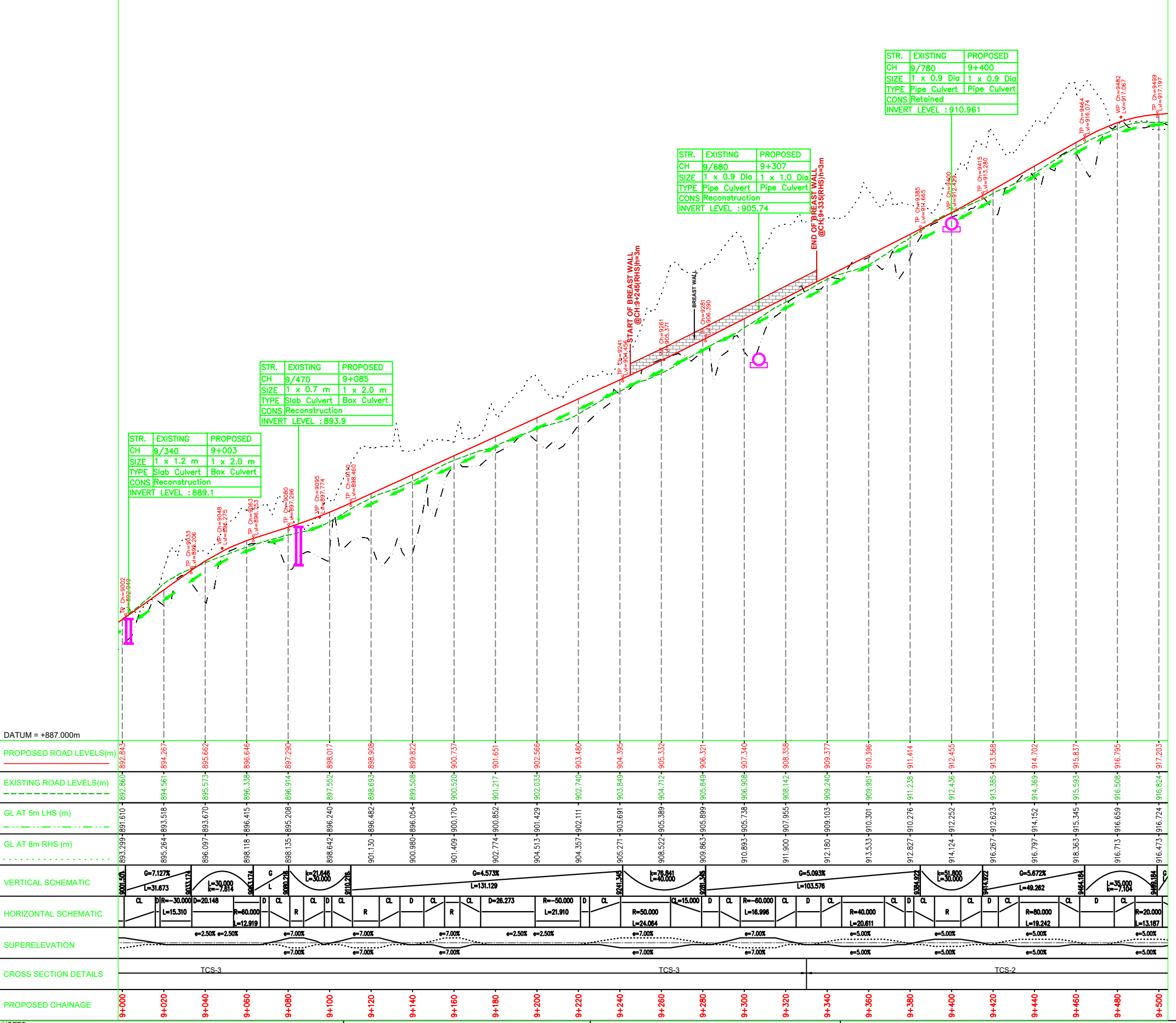
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 19A OF 22B

MANDI ←

→ KALKHAR



STR.	EXISTING	PROPOSED
CH	9/340	9+003
SIZE	1 x 1.2 m	1 x 2.0 m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	
INVERT LEVEL : 889.1		

STR.	EXISTING	PROPOSED
CH	9/470	9+085
SIZE	1 x 0.7 m	1 x 2.0 m
TYPE	Slab Culvert	Box Culvert
CONS	Reconstruction	
INVERT LEVEL : 893.9		

STR.	EXISTING	PROPOSED
CH	9/680	9+307
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL : 905.74		

STR.	EXISTING	PROPOSED
CH	9/780	9+400
SIZE	1 x 0.9 Dia	1 x 0.9 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Retained	
INVERT LEVEL : 910.961		

DATUM = +887.000m

	9+000	9+020	9+040	9+060	9+080	9+100	9+120	9+140	9+160	9+180	9+200	9+220	9+240	9+260	9+280	9+300	9+320	9+340	9+360	9+380	9+400	9+420	9+440	9+460	9+480	9+500	
PROPOSED ROAD LEVELS(m)	892.843	894.267	895.662	896.646	897.290	898.017	898.908	899.822	900.737	901.651	902.566	903.480	904.395	905.312	906.232	907.140	908.058	908.977	909.895	909.811	910.725	911.641	912.558	913.476	914.394	915.312	916.230
EXISTING ROAD LEVELS(m)	892.860	894.561	895.573	896.539	896.914	897.552	898.693	899.506	900.520	901.217	902.037	902.740	903.849	904.712	905.849	906.908	907.955	908.142	909.240	909.951	910.396	911.238	912.124	913.062	914.052	915.093	916.184
GL AT 5m LHS (m)	891.610	893.518	893.670	896.415	895.208	896.240	896.462	896.054	900.170	900.852	901.429	902.111	903.691	905.389	905.899	906.736	907.955	909.103	909.240	909.301	910.276	912.252	912.623	913.385	914.152	915.345	916.659
GL AT 8m RHS (m)	893.299	895.264	896.097	898.118	898.135	898.642	901.130	900.980	901.409	902.774	904.513	904.357	905.271	908.522	909.863	910.893	911.900	912.180	913.533	914.827	914.124	916.267	916.797	918.363	918.363	916.713	916.473

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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

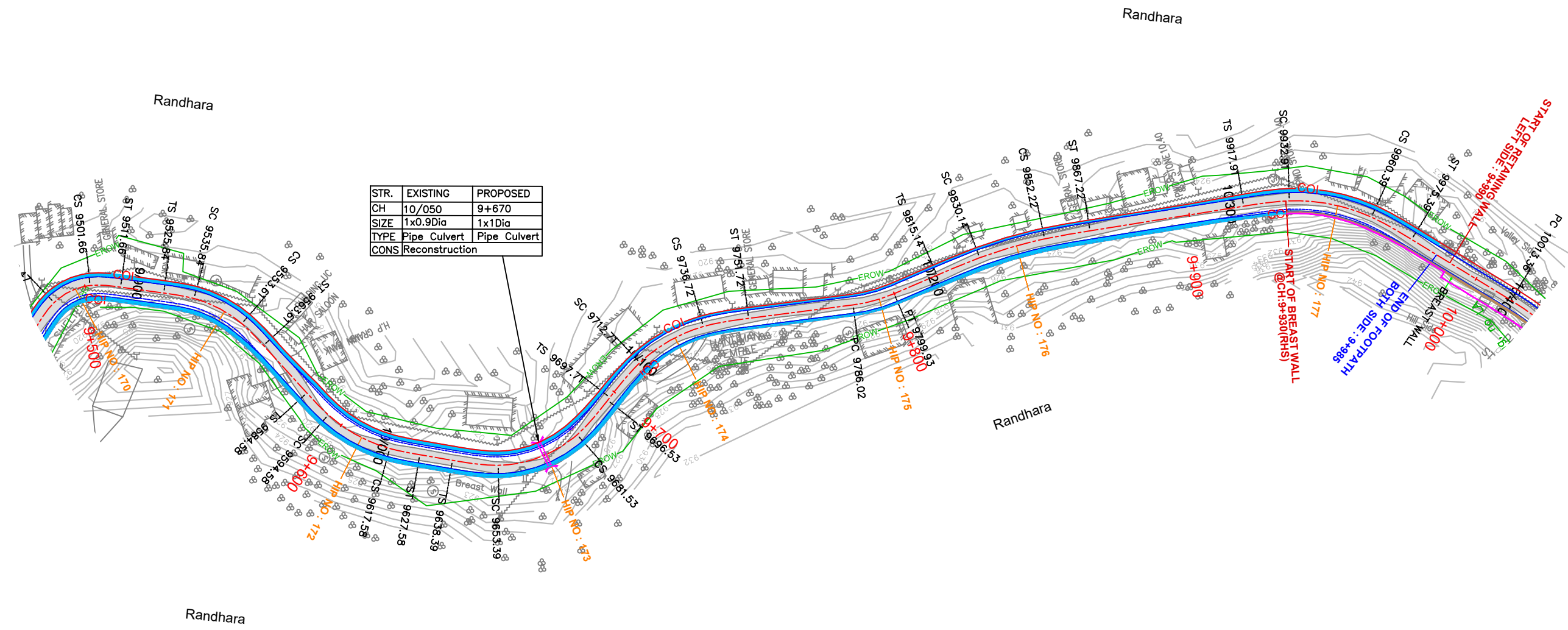
DESIGNED	GANESH	TITLE : DRAINAGE PLAN & PROFILE FROM CH: 9+000 TO CH: 9+500
DRAWN	SWAROOPA RANI	
CHECKED	PRANVI	DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
APPROVED	PRANVI	ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 19B OF 22B

TENDER PURPOSE ONLY

← MANDI

KALKHAR →



STR.	EXISTING	PROPOSED
CH	10/050	9+670
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

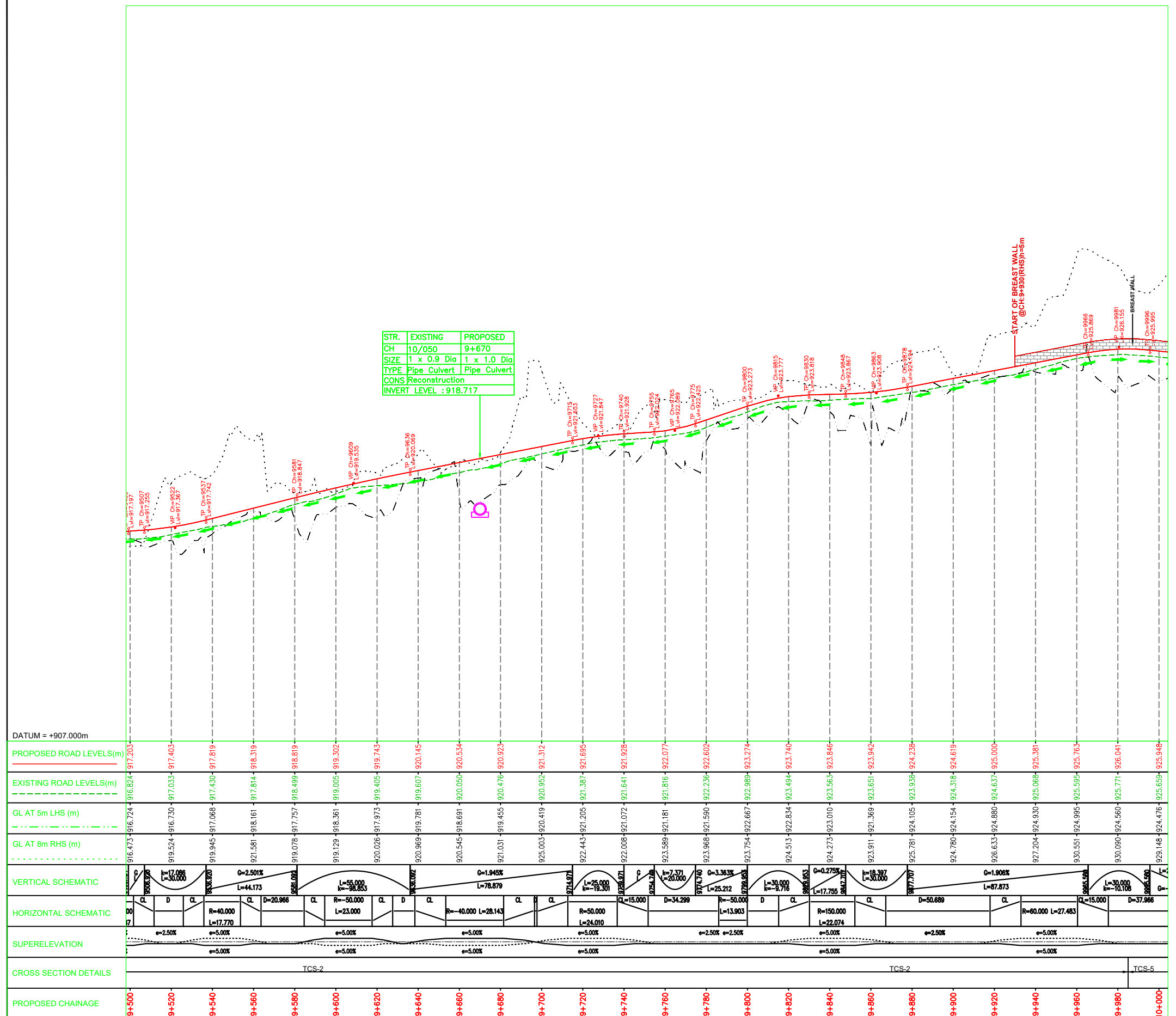
TITLE : DRAINAGE PLAN & PROFILE FROM CH: 9+500 TO CH: 10+000

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 20A OF 22B

STR.	EXISTING	PROPOSED
CH	10/050	9+670
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL : 918.717		



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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED



HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.



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)

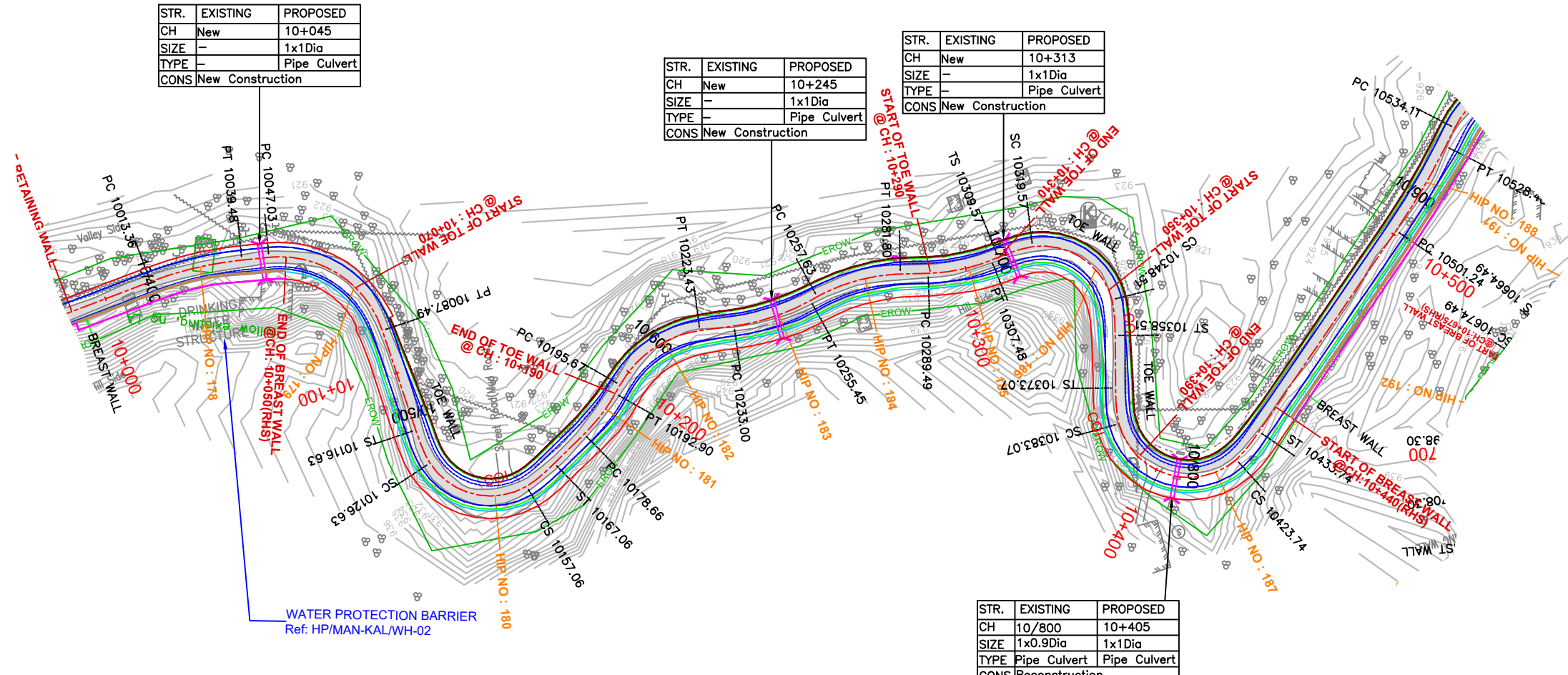
SCALE: NOT TO SCALE

DESIGNED	GANESH	TITLE : DRAINAGE PLAN & PROFILE FROM CH: 9+500 TO CH: 10+000
DRAWN	SWAROOPA RANI	
CHECKED	PRANVI	DRAWING NO : HP/MAN-KAL/DRAINAGE P&P
APPROVED	PRANVI	ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

TENDER PURPOSE ONLY

← MANDI

KALKHAR →



STR.	EXISTING	PROPOSED
CH	New	10+045
SIZE	-	1x1Dia
TYPE	-	Pipe Culvert
CONS	-	New Construction

STR.	EXISTING	PROPOSED
CH	New	10+245
SIZE	-	1x1Dia
TYPE	-	Pipe Culvert
CONS	-	New Construction

STR.	EXISTING	PROPOSED
CH	New	10+313
SIZE	-	1x1Dia
TYPE	-	Pipe Culvert
CONS	-	New Construction

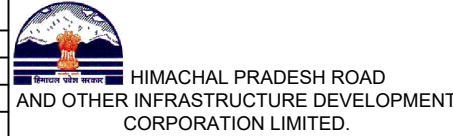
STR.	EXISTING	PROPOSED
CH	10/800	10+405
SIZE	1x0.9Dia	1x1Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	-	Reconstruction

WATER PROTECTION BARRIER
Ref: HP/MAN-KAL/WH-02

TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED



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

PROJECT:
Himachal Pradesh State Roads Transformation Project (HPSRTP)

SCALE: NOT TO SCALE

DESIGNED	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANNI
APPROVED	PRANNI

TITLE : DRAINAGE PLAN & PROFILE
FROM CH: 10+000 TO CH: 10+500

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

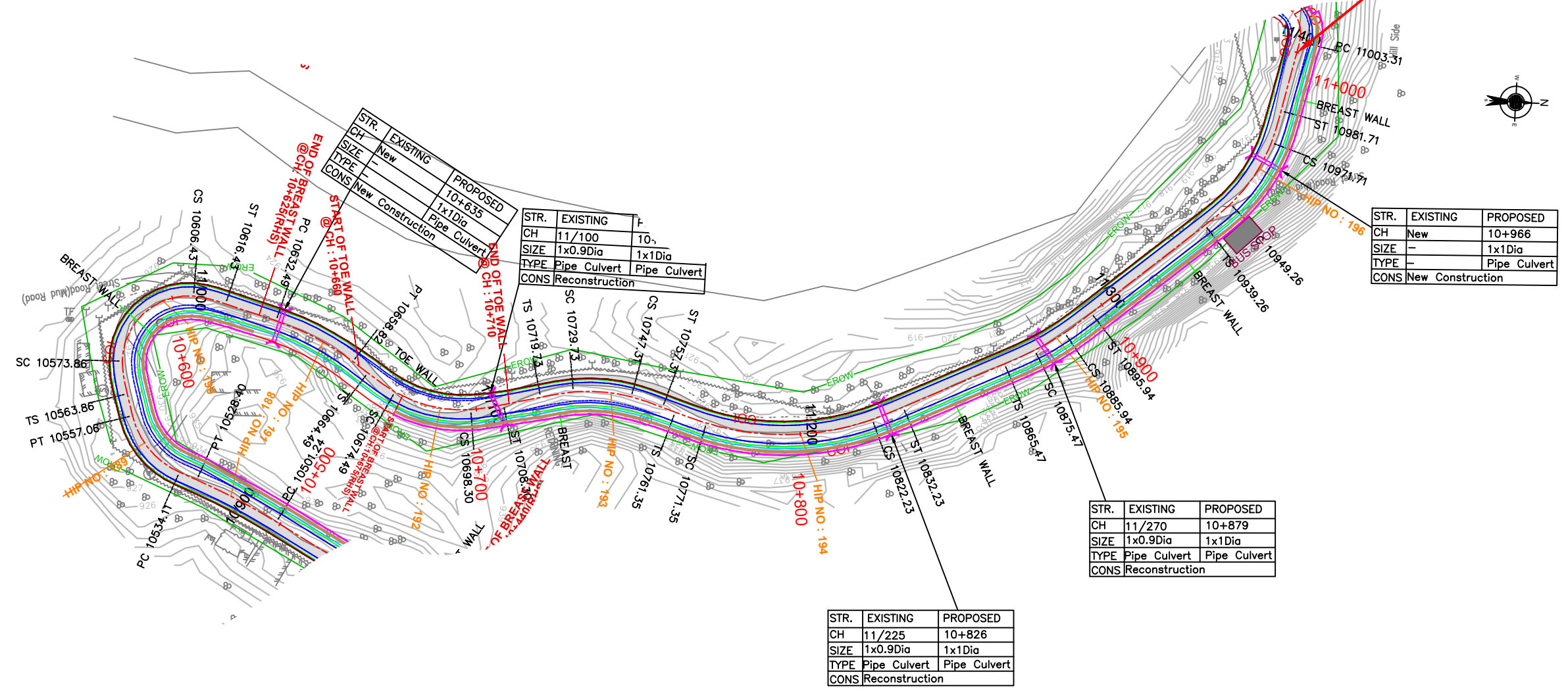
ROAD NAME : Package-V:
Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 21A OF 22B

← MANDI

KALKHAR →

**END OF PACKAGE-5
AT CH: 11+000**



TENDER PURPOSE ONLY

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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 10+500 TO CH: 11+000

DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 22A OF 22B

MANDI ←

→ KALKHAR

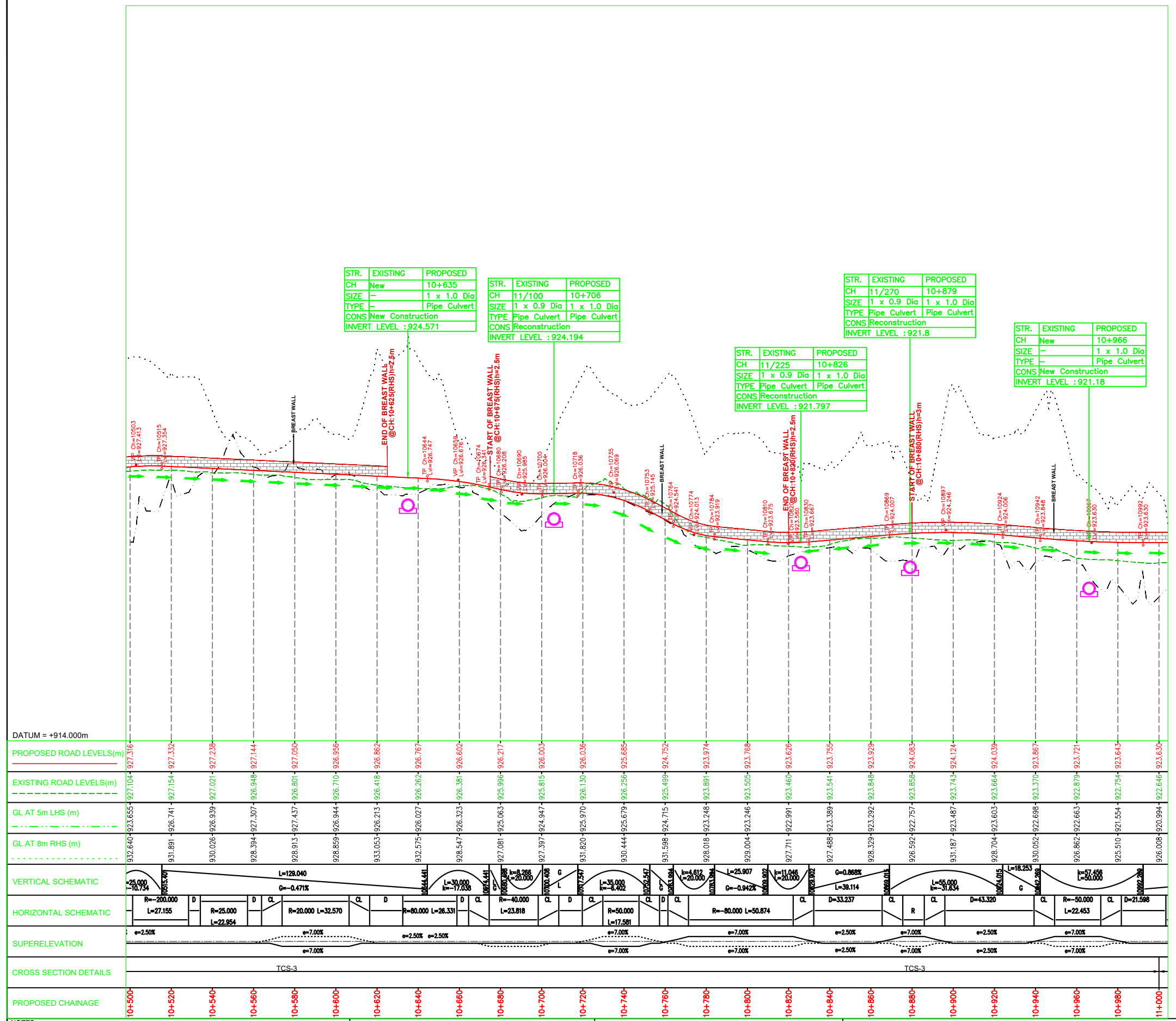
STR.	EXISTING	PROPOSED
CH	New	10+635
SIZE	-	1 x 1.0 Dia
TYPE	-	Pipe Culvert
CONS	New Construction	
INVERT LEVEL		: 924.571

STR.	EXISTING	PROPOSED
CH	11/100	10+706
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL		: 924.194

STR.	EXISTING	PROPOSED
CH	11/225	10+826
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL		: 921.797

STR.	EXISTING	PROPOSED
CH	11/270	10+879
SIZE	1 x 0.9 Dia	1 x 1.0 Dia
TYPE	Pipe Culvert	Pipe Culvert
CONS	Reconstruction	
INVERT LEVEL		: 921.8

STR.	EXISTING	PROPOSED
CH	New	10+966
SIZE	-	1 x 1.0 Dia
TYPE	-	Pipe Culvert
CONS	New Construction	
INVERT LEVEL		: 921.18



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

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

HIMACHAL PRADESH ROAD AND OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

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	GANESH
DRAWN	SWAROOPA RANI
CHECKED	PRANVI
APPROVED	PRANVI

TITLE : DRAINAGE PLAN & PROFILE FROM CH: 10+500 TO CH: 11+000

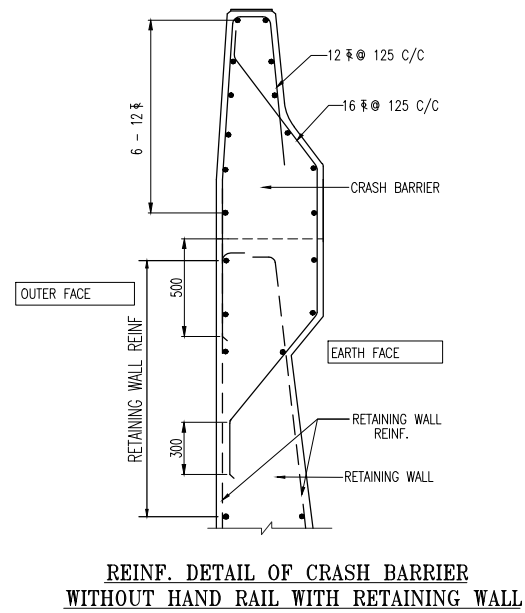
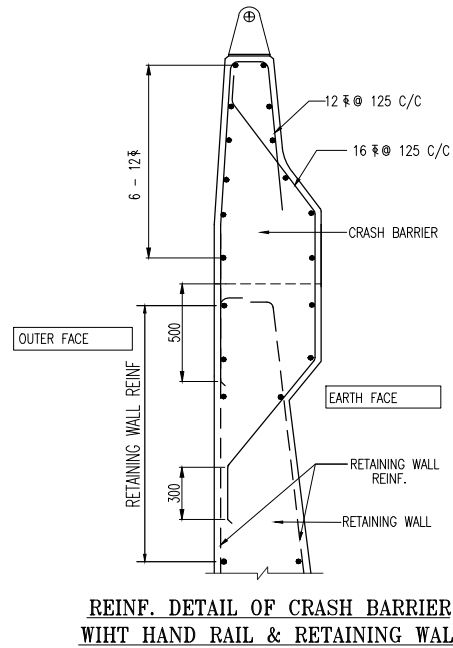
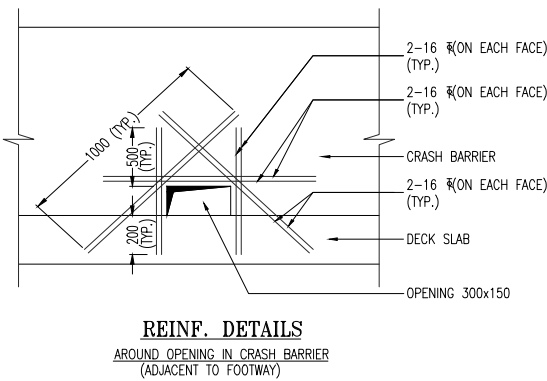
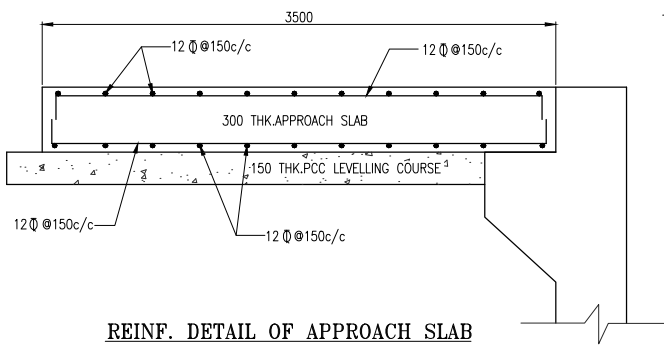
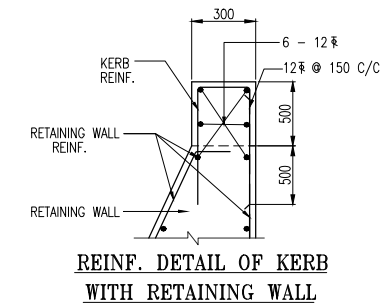
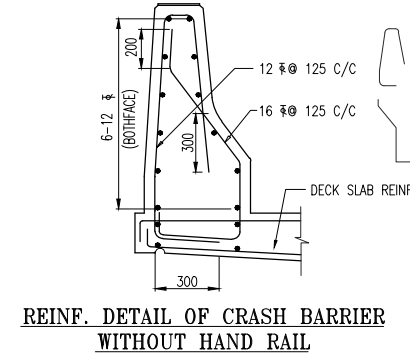
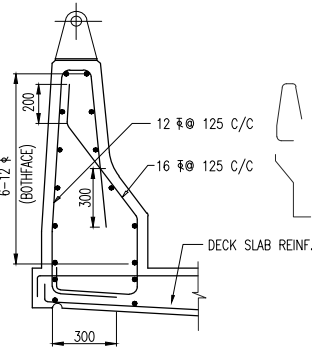
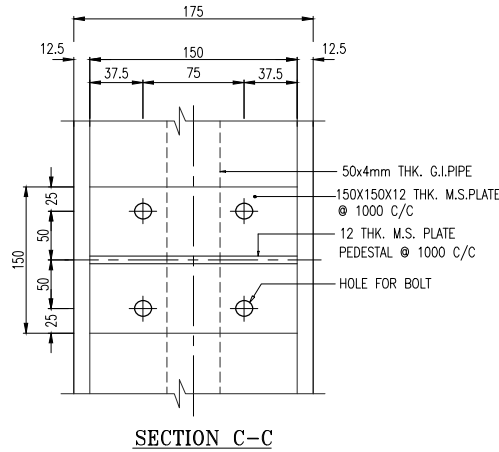
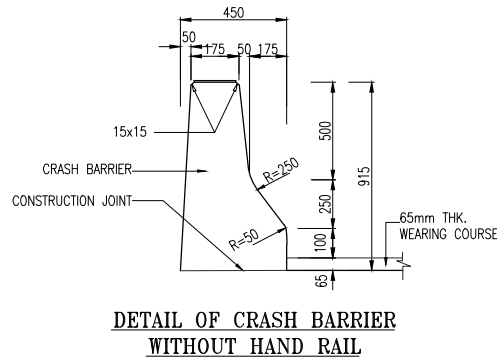
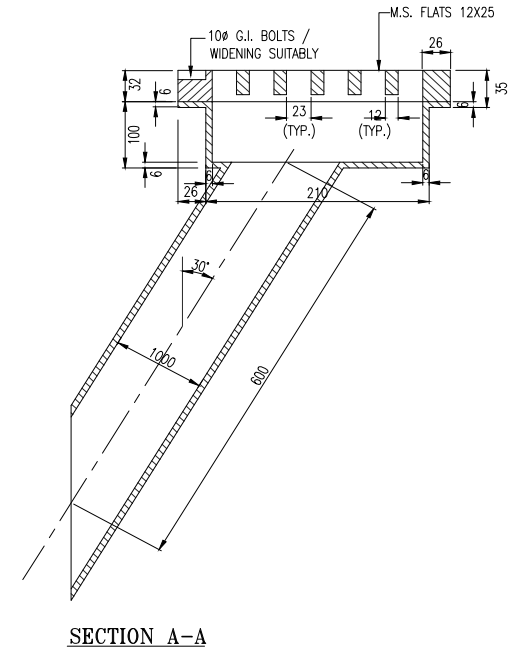
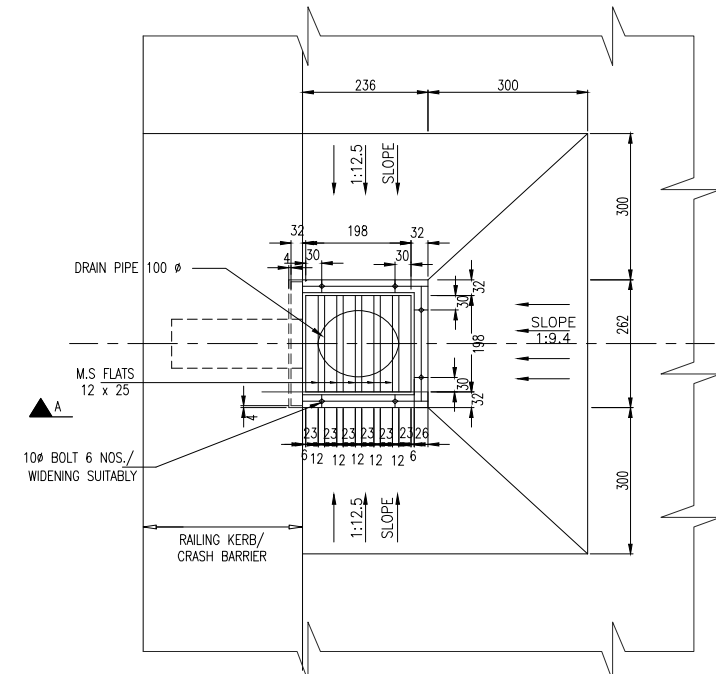
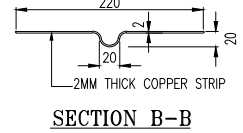
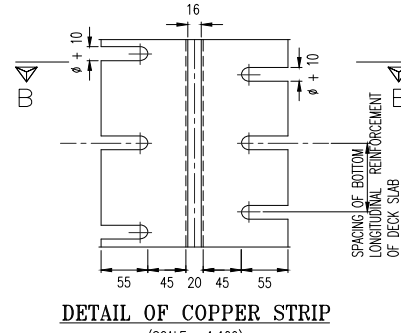
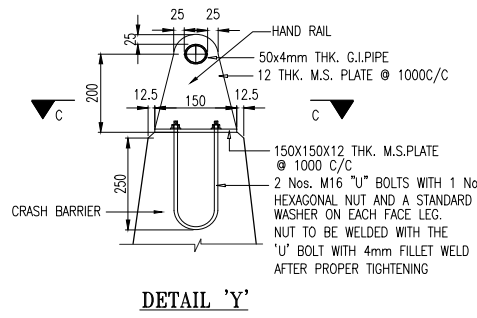
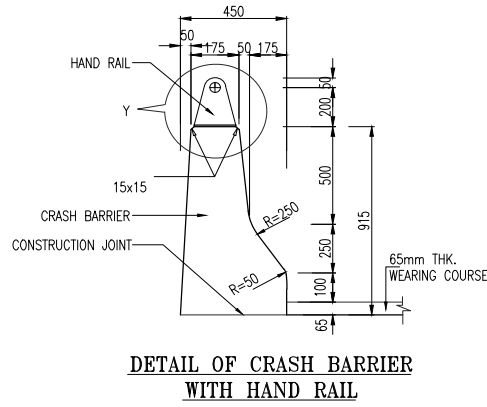
DRAWING NO : HP/MAN-KAL/DRAINAGE P&P

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

SHEET 22B OF 22B

TENDER PURPOSE ONLY

MISCELLANEOUS



- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETERS.
 - READ THIS DRAWING IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
 - SPACING OF DRAINAGE SPOUT IN DIFFERENT SPANS WILL BE AS SHOWN IN THE GENERAL ARRANGEMENT DRAWINGS OF THE CORRESPONDING SPANS.
 - DRAINAGE SPOUT AND COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
 - THE ENDS OF RAILING PIPES SHALL BE SEALED WITH A CIRCULAR PIECE OF MS PLATE WELDED TO END OF PIPE.
 - GRADE OF CONCRETE FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS:
a) CRASH BARRIER - M40
b) APPROACH SLAB - M30
 - 20mm EXPANSION GAP SHALL BE PROVIDED IN THE CRASH BARRIER AT EXPANSION JOINT LOCATIONS.
 - COMPRESSION SEAL EXPANSION JOINT SHALL BE PROVIDED UPTO 20mm EXP. GAP AND STRIP SEAL EXPANSION JOINT SHALL BE PROVIDED FOR EXPANSION GAP MORE THAN 20mm.
 - THE SPACING OF DRAINAGE SPOUT SHALL BE LESS THAN 5.0m C/C.
 - THE FIXING CLAMPS WILL BE OF HOT DIPPED GALVANISED MS FLAT.
 - MINIMUM NUMBER OF CLAMPS TO BE PROVIDED WITH VERTICAL DRAINAGE SPOUT FOR FIXING TO LONGITUDINAL GIRDERS SHALL BE TWO.

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: AS SHOWN

DATE:

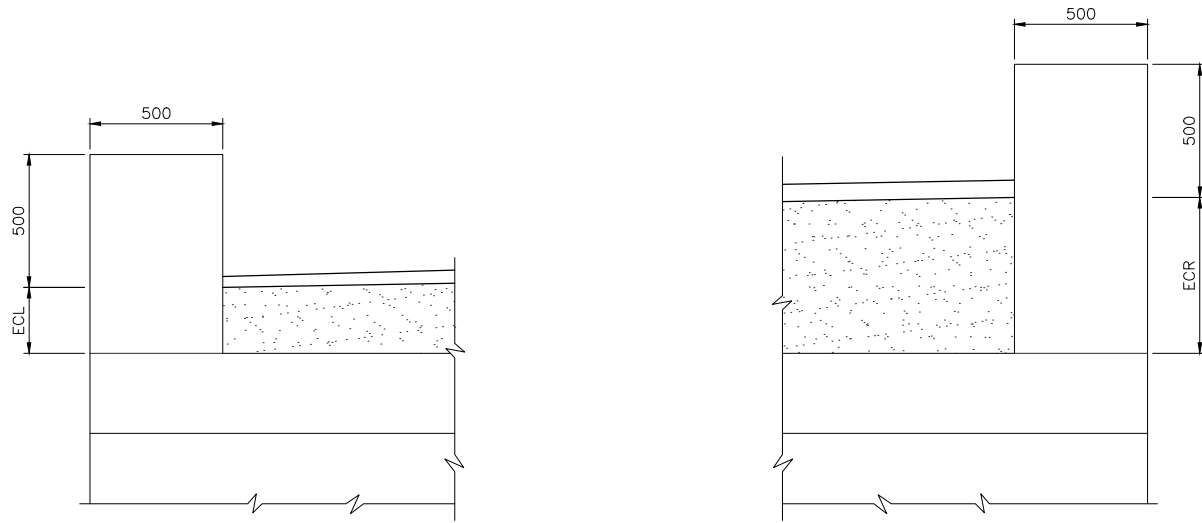
JOB No. : 01041055

TITLE : TYPICAL DETAILS OF CRASS BARRIER, DRAINAGE SPOUT & APROACH SLAB

DRAWING NO : HP/STR/ MISC/601

ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

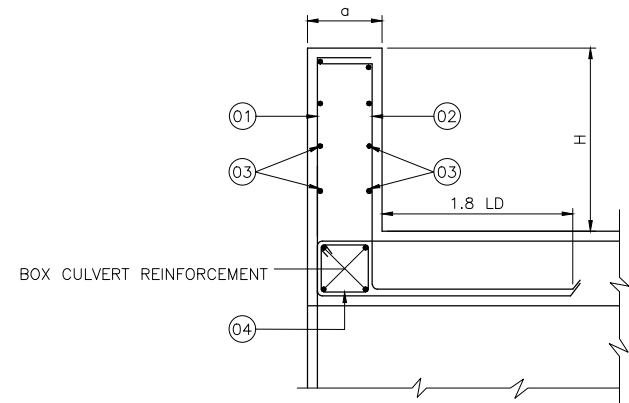
REV. 0
SIZE : A3
SHEET 01 OF 01



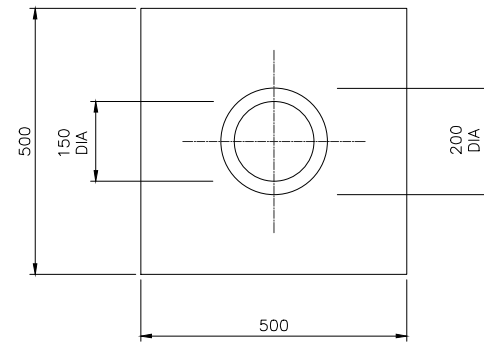
FOR LHS PARAPET

FOR RHS PARAPET

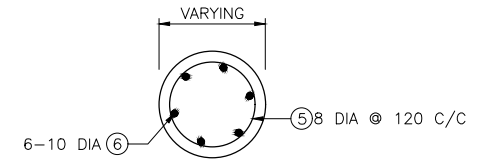
DIMENSIONAL DETAILS OF PARAPET
(SCALE 1:20)



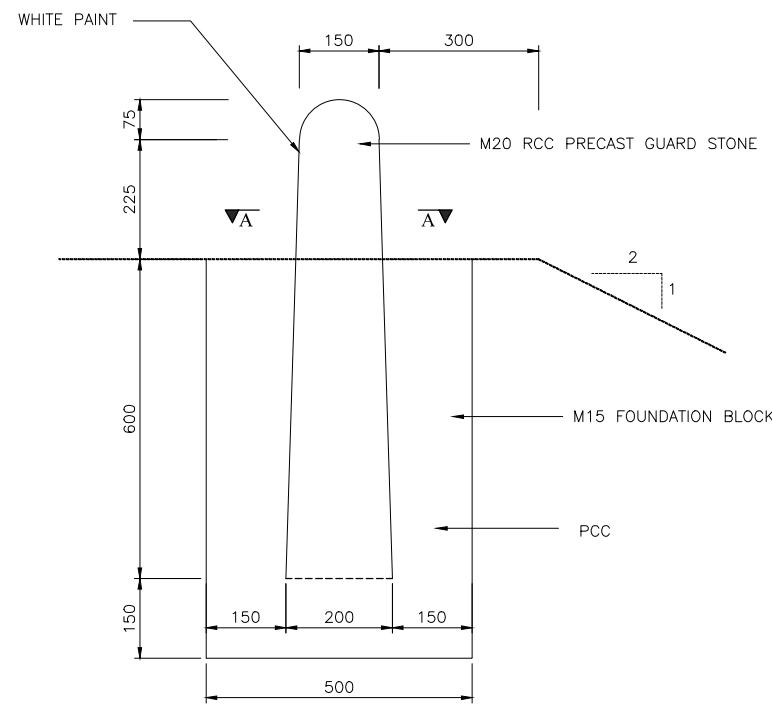
JUNCTION DETAIL OF PARAPET & TOP SLAB
(SCALE 1:20)



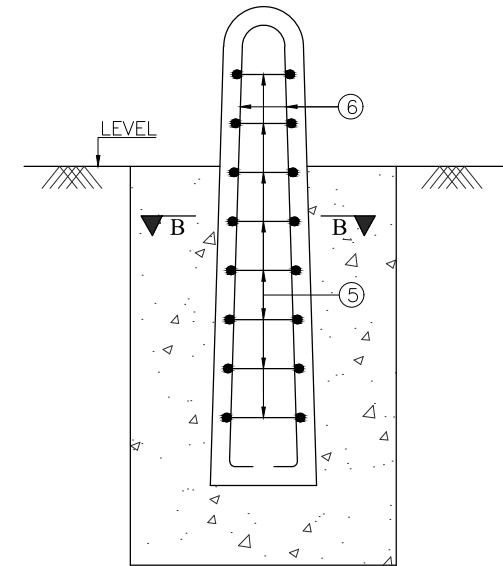
SECTION AT A-A
(SCALE 1:10)



SECTION AT B-B
(SCALE 1:10)



DETAIL OF PRECAST GUARD STONE @ 1.0m C/C
(SCALE 1:10)



REINFORCEMENT DETAIL OF GUARD STONE
(SCALE 1:10)

- NOTES: -**
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - CONCRETE GRADE
 - PCC M20
 - PARAPET WALL M30
 - GUARD STONE M20
 - GRADE OF UNTENSIONED STEEL SHALL BE S - 500 CONFORMING TO IS:1786.
 - NOT MORE THAN 50% OF THE BARS BE LAPPED AT ONE SECTION
 - DEVELOPMENT LENGTH LD 56 TIMES DIA OF BAR
 - LAP LENGTH 1.8 LD
 - CLEAR COVER :- PARAPET WALL-40mm.

REINFORCEMENT SCHEDULE											
HEIGHT OF PARAPET(H)		0.5m		1.0m		1.5m		2.0m		2.5m	
BAR MARK	SHAPE OF BARS (NOT TO SCALE)	BAR DIA. in mm.	SPACING in mm.	BAR DIA. in mm.	SPACING in mm.	BAR DIA. in mm.	SPACING in mm.	BAR DIA. in mm.	SPACING in mm.	BAR DIA. in mm.	SPACING in mm.
01		10	180	10	180	10	250	10	200	10	200
02		10	180	10	180	10	120	12	150	12	100
03		10	250	10	250	10	250	10	250	10	250
04		NOT IN USE		NOT IN USE		NOT IN USE		10	200	10	200

DIMENSION OF PARAPET WALL					
0	HEIGHT				
	0.5m	1.0m	1.5m	2.0m	2.5m
0	300	300	300	300	300

TENDER PURPOSE ONLY

NOTES:
1. ALL DIMENSIONS ARE IN METERS 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

DESIGNED	GANESH
DRAWN	SATYA
CHECKED	PRANAI
APPROVED	PRANAI

ROAD NAME :

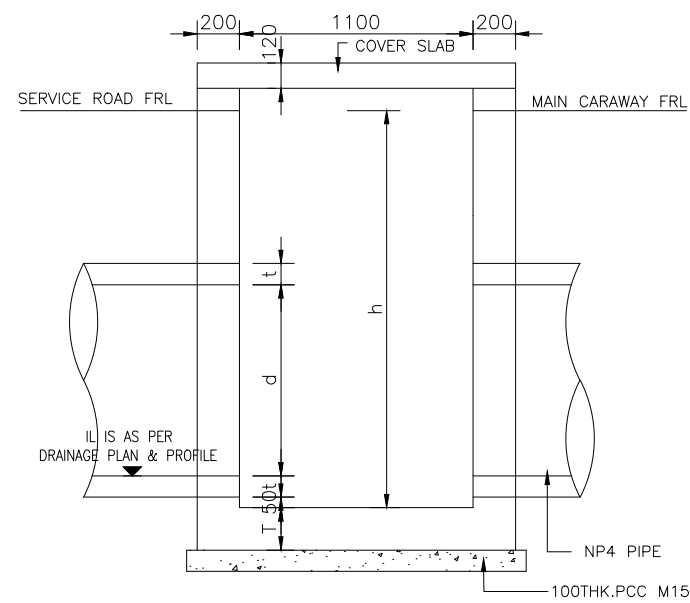
TITLE :

TYPICAL DETAILS OF PARAPET WALL & GUARD STONE

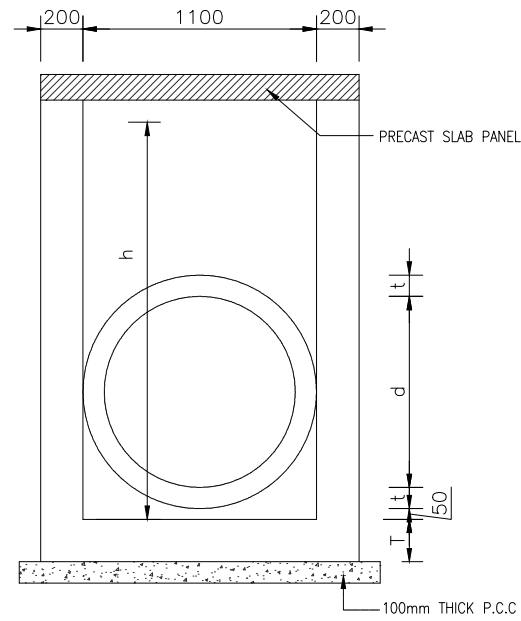
DRAWING NO : HP/STR/MISC/602

Package-V:
Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

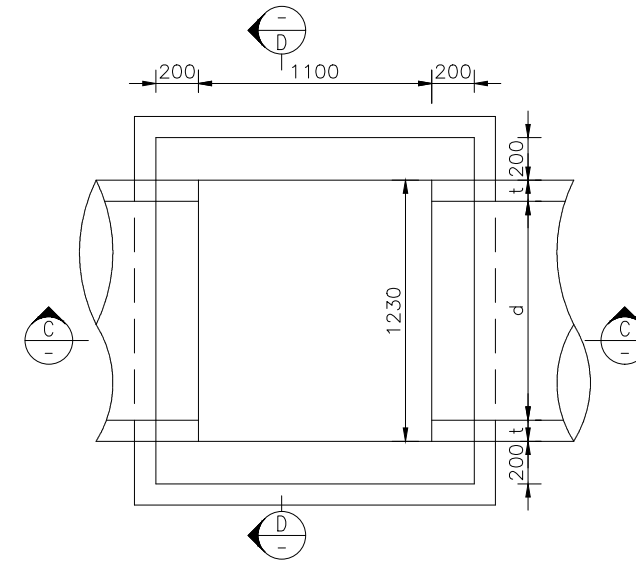
REV. 0
SIZE : A3
SHEET 01 OF 01



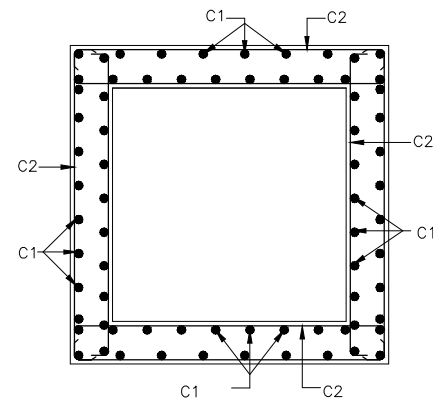
SECTION C-C



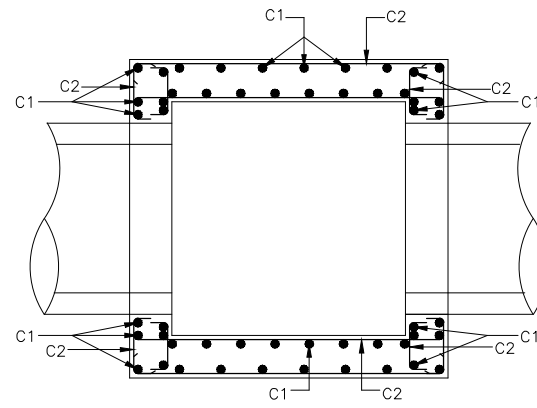
SECTION D-D



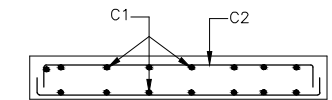
PLAN (SINGLE ROW OF PIPE)



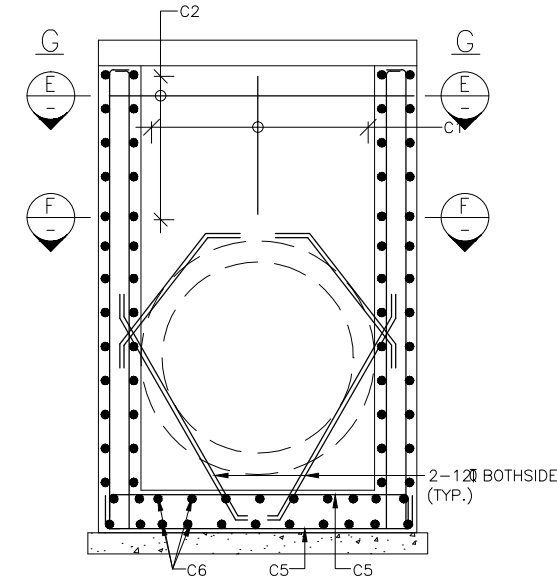
SECTION E-E



SECTION F-F
SHOWING REINFORCEMENT



SECTION G-G
SHOWING REINFORCEMENT



(TYP.) REINFORCEMENT SHOWING SECTIONAL ELEVATION

SCHEDULE OF REINFORCEMENT							
Heights (h)	Wall Thk. (T)	C1	C2	C3	C4	C5	C6
2000	200	12# 150 C/C	10# 200 C/C	NOT USED	NOT USED	12# 150 C/C	12# 150 C/C

NOTES:

1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
2. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH OF 25MPa.
3. ALL UNTENSIONED REINFORCEMENT SHALL BE GRADE DESIGNATION S-500 CONFORMING TO IS:1786 STANDARD WITH YIELD STRENGTH OF 500 N/Sq.mm.
4. THE CLEAR COVER FOR BOTTOM SLAB, WALL SHALL BE 40mm & SLAB SHALL BE 25mm
5. NOT MORE THAN 50% BARS SHALL BE LAPPED AT ANY LOCATION. LAP LENGTH OF BAR SHALL BE 76 TIMES THE DIA OF BAR.

CONSTRUCTION NOTES :

- 1). INSPECTION CHAMBERS SHALL BE PROVIDED AT A SPACING OF 15M, IN ADDITION AT THE START, JUNCTION, AND AT THE POINT OF CHANGE IN GRADIENT.
- 2). R.C.C. PIPE SHALL HAVE MINIMUM LONGITUDINAL SLOPE OF 1:1000.
- 3). ALL FOUNDATIONS OF OPEN LINED DRAIN, INSPECTION CHAMBER SHALL BE CONSTRUCTED IN PCC M15 GRADE.
- 4). INSPECTION CHAMBER SHALL BE PRECAST M25 GRADE.
- 5). REINFORCEMENT SHALL BE TMT Fe500 AS PER SECTION 1600, UNLESS OTHERWISE SPECIFIED.

TENDER PURPOSE ONLY

NOTES:
1. ALL DIMENSIONS ARE IN METERS 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

DESIGNED	GANESH
DRAWN	SATYA
CHECKED	PRANAI
APPROVED	PRANAI

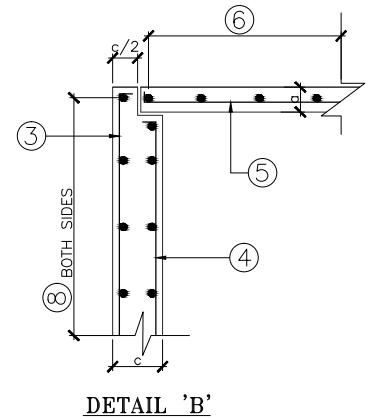
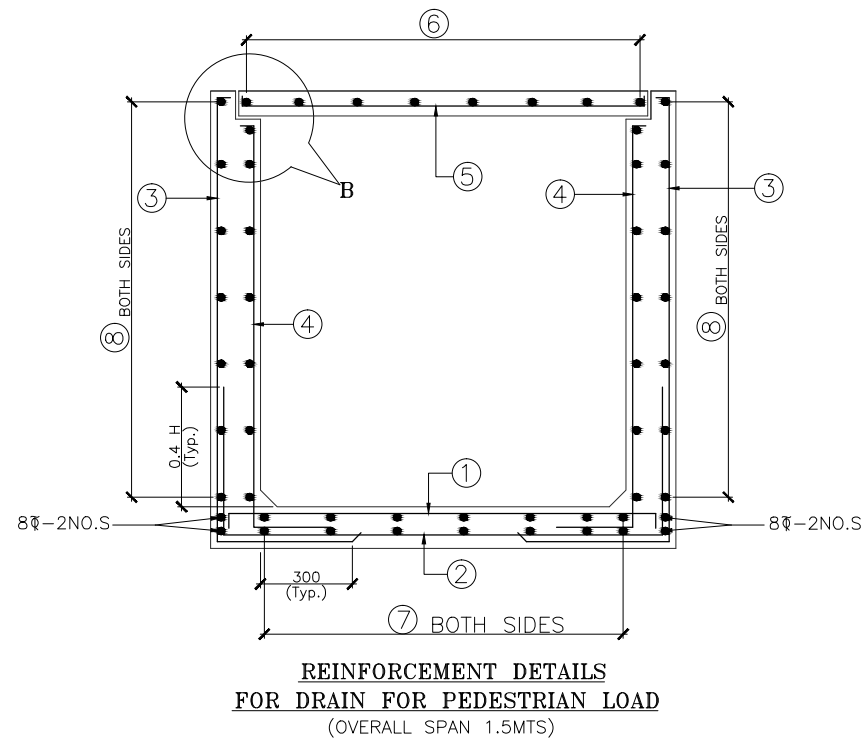
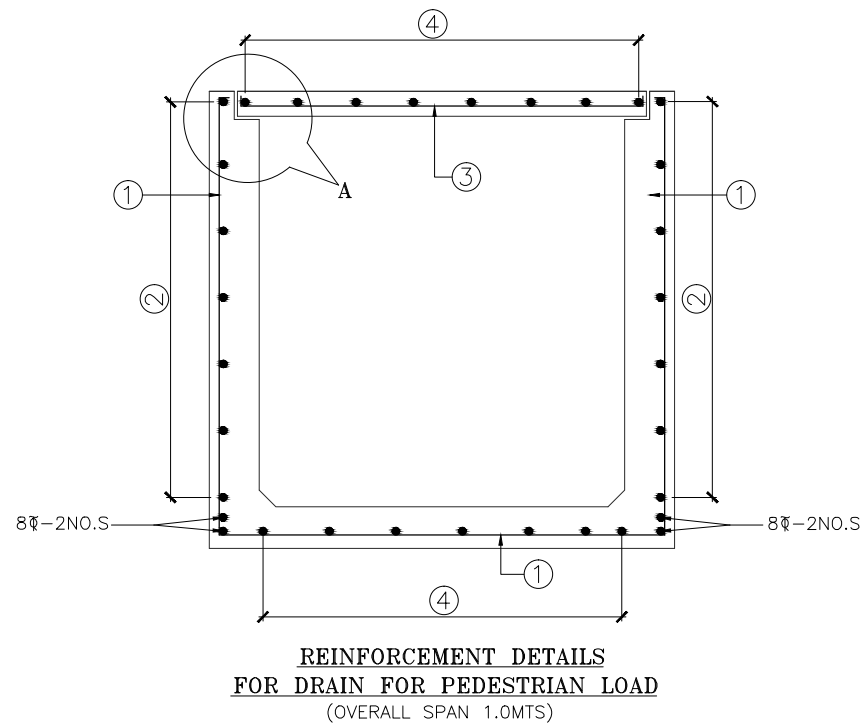
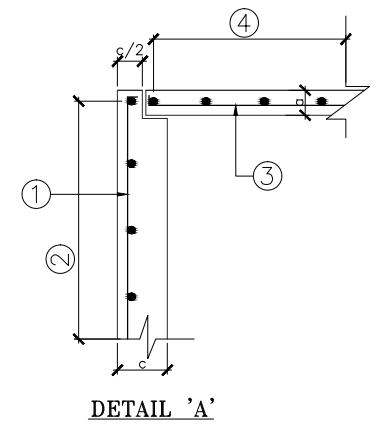
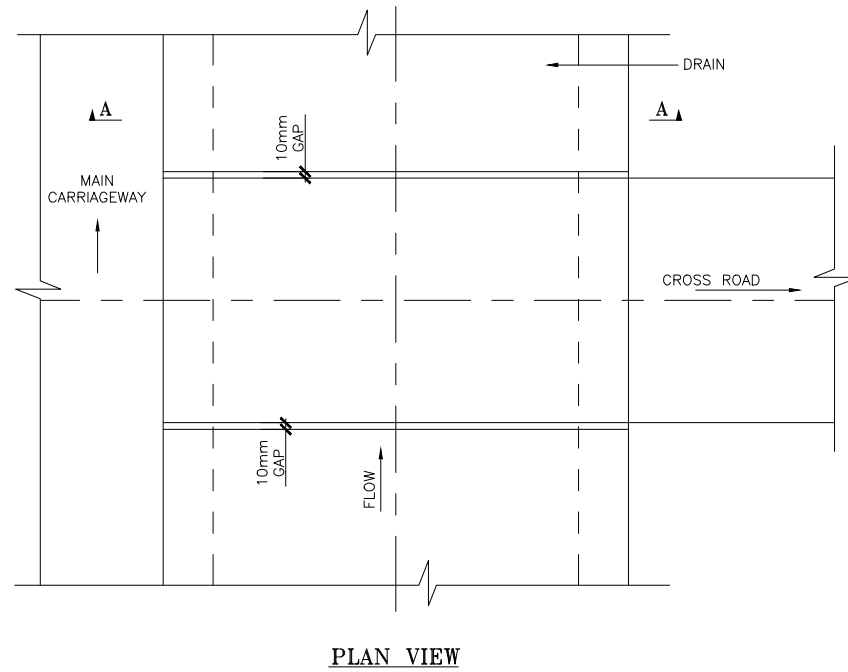
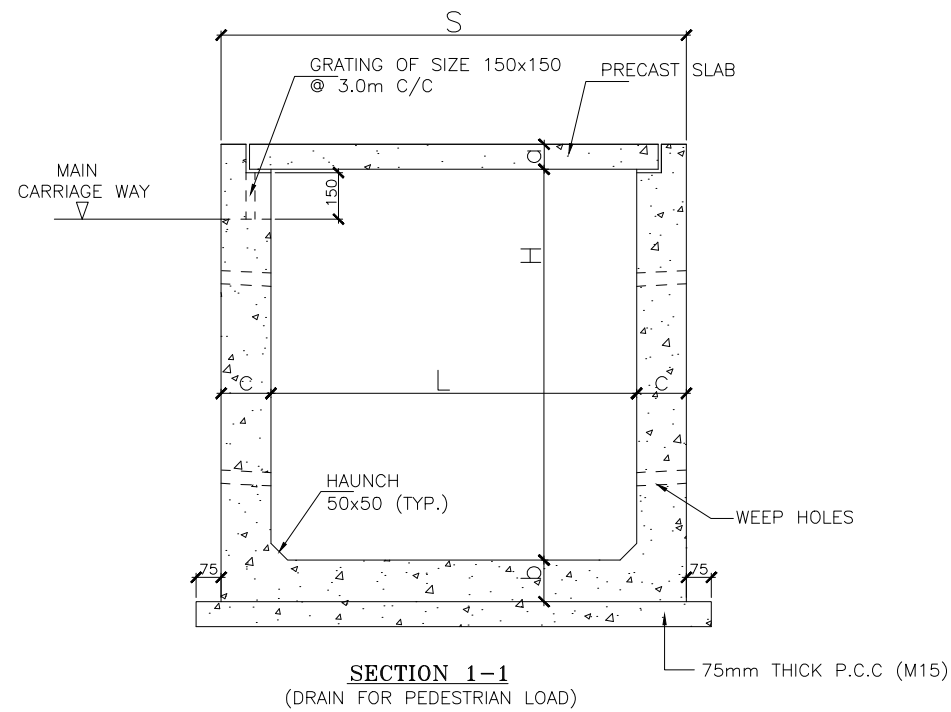
TITLE : TYPICAL DETAILS OF CHAMBER OF PIPE CULVERT

DRAWING NO : HP/STR/MISC/603

ROAD NAME : Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

Package-V:

REV. 0
SIZE : A3
SHEET 01 OF 01



- 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-500D CONFORMING TO IS:1786 STANDARD.
 - CLEAR COVER TO REINFORCEMENT FOR DIFFERENT ELEMENTS SHALL BE AS FOLLOWS.
40mm FOR BOTTOM SLAB
40mm FOR EXTERNAL WALL
40mm 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 56φ.
 - BACK FILLING SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX: 6 OF IRC:78-2000 HAVING PROPERTIES C=0, φ = 30°, d = 20° & gd = 18 KN/Cum.

DIMENSION DETAILS									REINFORCEMENT DETAILS							
S.NO.	LOCATION	OVERALL SPAN (S)	LENGTH (L)	HEIGHT (H)	(a)	(b)	(c)	SBC Req t/m ²	①		②		③		④	
									dia	spacing	dia	spacing	dia	spacing	dia	spacing
1	Drain For Pedestrian Load	1000	750	1500	85	125	125	2.0	10	150	8	250	10	200	8	250

DIMENSION DETAILS									REINFORCEMENT DETAILS															
S.NO.	LOCATION	OVERALL SPAN (S)	LENGTH (L)	HEIGHT (H)	(a)	(b)	(c)	SBC Req t/m ²	①		②		③		④		⑤		⑥		⑦		⑧	
									dia	spacing	dia	spacing	dia	spacing	dia	spacing	dia	spacing	dia	spacing	dia	spacing	dia	spacing
1	Drain For Pedestrian Load	1500	1200	1500	125	150	150	2.1	10	200	10	200	10	200	10	250	10	250	8	250	8	250	8	250

TENDER PURPOSE ONLY

NOTES:
1. ALL DIMENSIONS ARE IN METERS 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

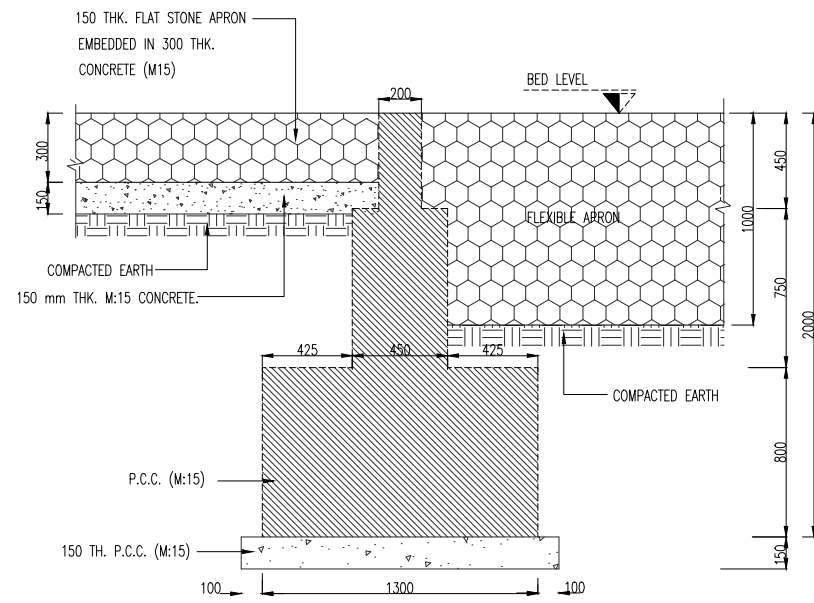
DESIGNED	GANESH
DRAWN	SATYA
CHECKED	PRANAI
APPROVED	PRANAI

TITLE : TYPICAL DETAILS OF COVERED DRAIN

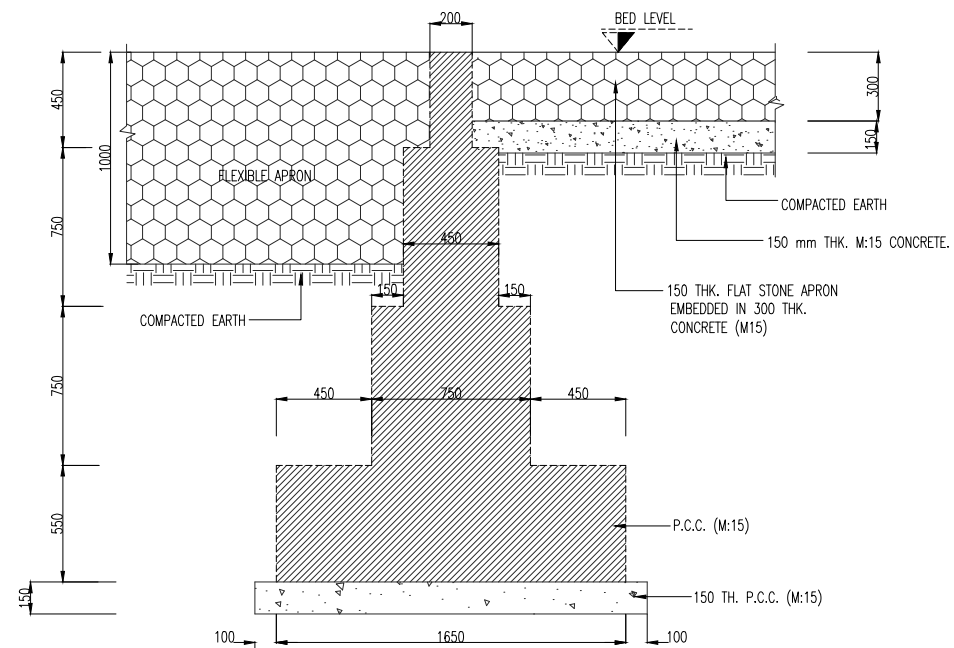
DRAWING NO : HP/STR/MISC/604

ROAD NAME : Package-V:
Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000

REV. 0
SIZE : A3
SHEET 01 OF 01



**DETAILS OF CURTAIN WALL TYPE-II
(UP STREAM SIDE)**
(SCALE: 1:50)




**DETAILS OF CURTAIN WALL TYPE-I
(DOWN STREAM SIDE)**
(SCALE: 1:50)

TENDER PURPOSE ONLY

NOTES:
1. ALL DIMENSIONS ARE IN METERS 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

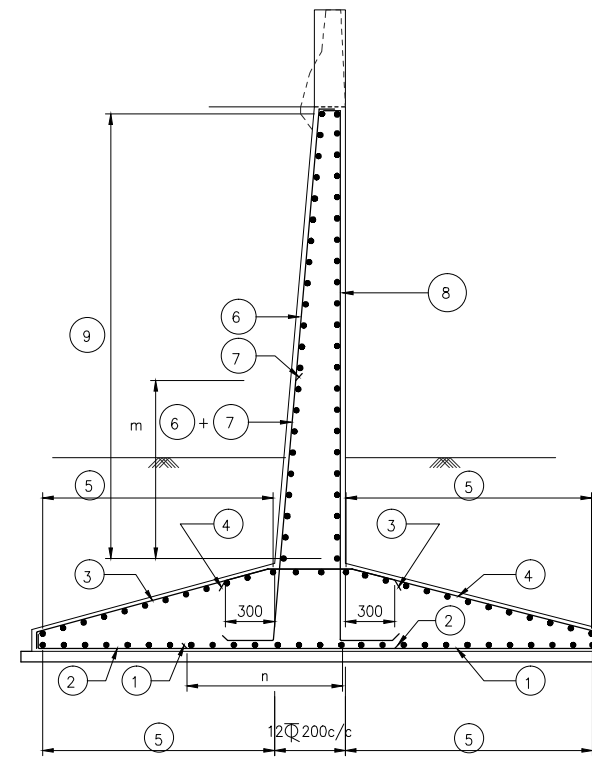
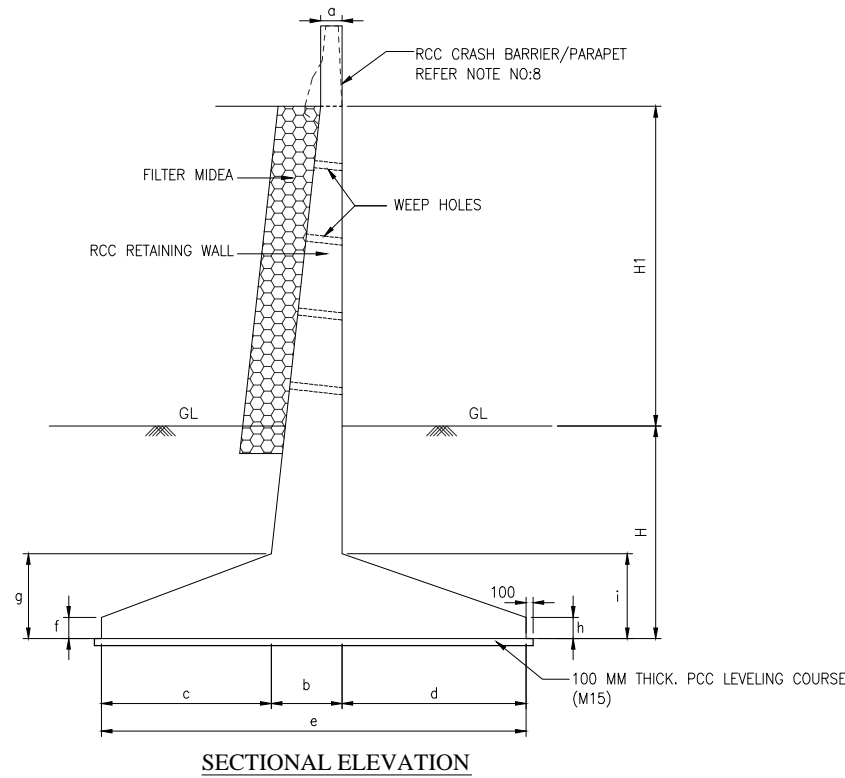
PROJECT:
HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)

SCALE: AS SHOWN
DATE: _____

JOB No. : 01041055
DESIGNED: GANESH
DRAWN: SATYA
CHECKED: PRANAI
APPROVED: PRANAI

TITLE :
TYPICAL DETAILS OF PROTECTION WORKS
REV. 0
SIZE : A3

DRAWING NO : HP/STR/MISC/605
ROAD NAME : Package-V:
Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000
SHEET 01 OF 01



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

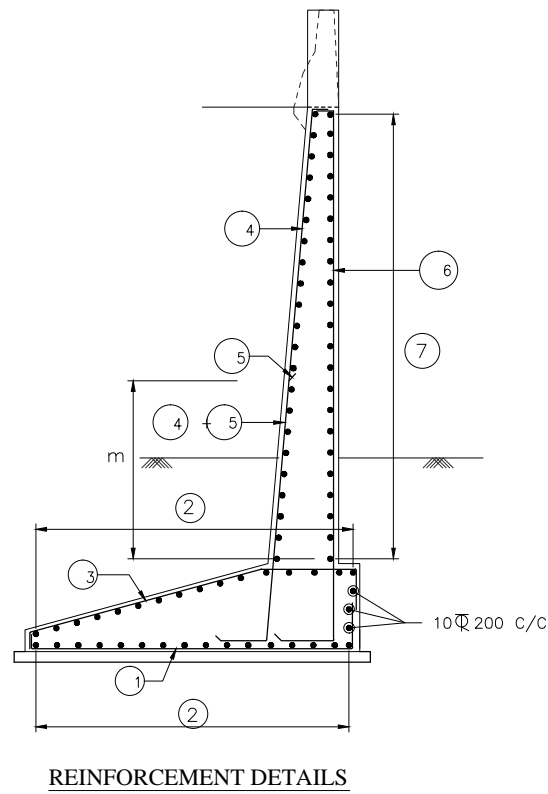
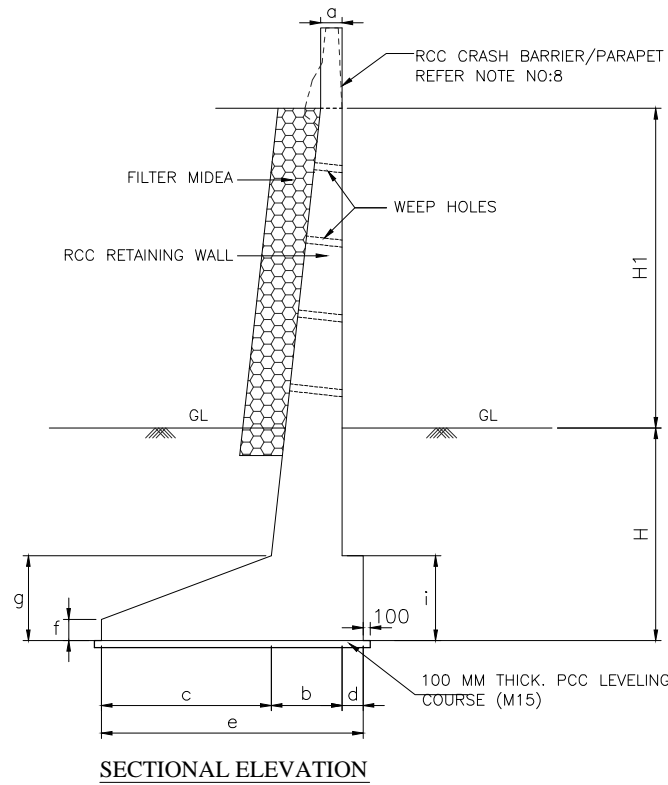
Height (H1) Bar Mark	Shape of bars	2000	3000	4000	5000	6000
		Bar Dia & Spacing	Bar Dia & Spacing	Bar Dia & Spacing	Bar Dia & Spacing	Bar Dia & Spacing
1		12 φ150 C/C	12 φ130 C/C	16 φ160 C/C	16 φ140 C/C	16 φ100 C/C
2		10 φ150 C/C	10 φ130 C/C	10 φ160 C/C	10 φ140 C/C	10 φ110 C/C
3		12 φ150 C/C	12 φ130 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

NOTES: 1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.				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)				JOB No. : 01041055		TITLE : DIMENSION AND REINFORCEMENT DETAILS OF RCC RETAINING WALL (TYPE-I)		REV. 0																																							
<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> <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																																	HIMACHAL PRADESH STATE ROADS TRANSFORMATION PROJECT (HPSRTP)				<table border="1"> <tr> <td>DESIGNED</td> <td>GANESH</td> </tr> <tr> <td>DRAWN</td> <td>SATYA</td> </tr> <tr> <td>CHECKED</td> <td>PRANAI</td> </tr> <tr> <td>APPROVED</td> <td>PRANAI</td> </tr> </table>		DESIGNED	GANESH	DRAWN	SATYA	CHECKED	PRANAI	APPROVED	PRANAI	DRAWING NO : HP/STR/MISC/607		SIZE : A3
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																																																					
DESIGNED	GANESH																																																										
DRAWN	SATYA																																																										
CHECKED	PRANAI																																																										
APPROVED	PRANAI																																																										
ROAD NAME :										Package-V:		SHEET 01 OF 01																																															
Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000										SCALE: AS SHOWN		DATE																																															



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	Bar Dia & Spacing	Bar Dia & Spacing	Bar Dia & Spacing	Bar Dia & Spacing	Bar Dia & Spacing	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 50 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, φ = 30° (H1=1.0m, 2.0m, 3.0m & 4.0m) C=0, φ = 40° (H1=5.0m, 6.0m & 7.0m) 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

<p>NOTES: 1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.</p>					<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>JOB No. : 01041055</p> <table border="1"> <tr> <td>DESIGNED</td> <td>GANESH</td> </tr> <tr> <td>DRAWN</td> <td>SATYA</td> </tr> <tr> <td>CHECKED</td> <td>PRANAI</td> </tr> <tr> <td>APPROVED</td> <td>PRANAI</td> </tr> </table>		DESIGNED	GANESH	DRAWN	SATYA	CHECKED	PRANAI	APPROVED	PRANAI	<p>TITLE :</p> <p>DIMENSION AND REINFORCEMENT DETAILS OF RCC RETAINING WALL (TYPE-II)</p> <p>DRAWING NO : HP/STR/MISC/608</p>		<p>REV. 0</p>		
DESIGNED	GANESH																								
DRAWN	SATYA																								
CHECKED	PRANAI																								
APPROVED	PRANAI																								
<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>SCALE:</p> <p>AS SHOWN</p>		<p>DATE</p>		<p>ROAD NAME : Package-V: Upgradation of Mandi - Rewalsar - Kalkhar Road in Mandi District From Km 0+000 To Km 11+000</p>		<p>SHEET 01 OF 01</p>
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED																			