

GOVERNMENT OF ANDHRA PRADESH

IRRIGATION AND CAD DEPARTMENT

(H.N.S.S. PHASE-2, PACKAGE NO.9.

HYDRAULIC PARTICULARS HNSS MAIN CANAL(STAGE-II) FROM KM 340.000 TO 357.483/358.000

SL. No	Reach No.	Reach in KM			Hydraulic Particulars											Loss (m)			Bed Level		Full Supply Level		Remarks	
		From	To	Distance (IN Mts)	Required Discharge (Cumecs)	Bed Width (In Mts)	F.S.D (In Mts)	Surface Fall	Side Slopes	A(m2)	P(m)	R(m)	R=2/3	Velocity M/Sec	Designed Discharge (Cumecs)	Due To Bed Fall	DueTo CM & CD Structures	Total	At Start (M)	At End (M)	At Start (M)	At End (M)		
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	1	340.000	345.300	5300	51.680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2		345.300	345.350	50	TRANSITION		3.25	1: 9625								0.0051	0.00	0.005	446.630	446.625	449.990	449.478		
3	2	345.350	346.950	1600	51.680	11.00	3.25	1: 10000	1.00:1	52.81	22.192	2.380	1.782	0.990	52.288	0.160	0.00	0.160	446.625	446.465	449.478	449.718	FULL CUTTING VARIES FROM 5.2M TO 6.70M	SDR/HDR/HR
4		346.950	347.000	50	TRANSITION		3.25	1: 9625								0.005	0.00	0.005	446.465	446.480	449.718	449.710		
5	3	347.000	347.550	550	51.680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H.R.FULL CUTTING VARIES FROM 9.40M TO 13.0M	HP'S ARE WITH HOLD FOR WANT OF BORE HOLE DATA
6		347.550	347.600	50	TRANSITION		3.25	1: 9625								0.005	0.00	0.005	446.400	446.398	449.853	448.648		
7	4	347.600	348.250	650	51.680	13.00	3.25	1: 10000	1.00:1	52.81	22.192	2.380	1.782	0.990	52.288	0.005	0.00	0.005	446.398	446.333	448.648	449.583	FULL CUTTING VARIES FROM 8.80M TO 15 M	F&F / HR
8		348.250	348.300	50	TRANSITION		3.25	1: 9625								0.005	0.00	0.005	446.333	446.333	449.583	449.572		
9	5	348.300	348.650	350	51.680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H.R.FULL CUTTING VARIES FROM 8.60M TO 15.0M	HP'S ARE WITH HOLD FOR WANT OF BORE HOLE DATA
10		348.650	348.700	50	TRANSITION		3.25	1: 9625								0.005	0.00	0.005	446.242	446.287	449.542	449.537		
11	6	348.700	349.200	500	51.680	13.00	3.25	1: 10000	1 : 1	52.810	22.192	2.380	1.782	0.990	52.294	0.050	0.00	0.050	446.287	446.237	449.537	449.487	FULL CUTTING VARIES FROM 8.20M TO 8.10 M	F&F / HR
12		349.200	349.250	50	TRANSITION		3.25	1: 11000								0.005	0.00	0.005	446.237	446.232	449.487	449.482		
13	7	349.250	352.550	3300	51.680	13.00	3.25	1: 12000	1.50 : 1	58.000	24.718	2.380	1.768	0.894	52.081	0.275	0.00	0.275	446.232	445.957	449.482	449.207	PARTIAL CUTTING, FILLING	AKS/SDR/HDR/F&F /HR
14		352.550	352.600	50	TRANSITION		3.25	1: 12000								0.005	0.00	0.005	445.957	445.952	449.207	449.202		
15	8	352.600	353.925	1325	51.680	11.80	3.25	1: 12000	2.00 : 1	59.440	28.224	2.380	1.721	0.873	51.921	0.110	0.00	0.110	445.952	445.842	449.202	449.092	FULL BANKING & BED FILLING	ALL SOILS,SDR & HDR
16		353.925	353.975	50	TRANSITION		3.25	1: 11000								0.005	0.00	0.005	445.842	445.837	449.092	449.087		
17	9	353.975	354.525	550	51.680	13.00	3.25	1: 10000	1 : 1	52.410	22.192	2.380	1.782	0.473	51.926	0.055	0.00	0.055	445.837	445.782	449.087	449.032	FULL CUTTING VARIES FROM 8.0M TO 17.0M	F&F/HR
18		354.525	354.575	50	TRANSITION		3.25	1: 11000								0.005	0.00	0.005	445.782	445.777	449.032	449.027		
19	10	354.575	354.825	250	51.680	11.80	3.25	1: 12000	2.00 : 1	59.480	26.334	2.380	1.721	0.873	51.921	0.021	0.00	0.021	445.777	445.756	449.027	449.908	FULL BANKING & BED FILLING	ALL SOILS,SDR & HDR

SL. No	Reach No.	Reach in KM			Hydraulic Particulars											Loss (m)			Bed Level		Full Supply Level		Remarks	
		From	To	Distance (IN Mts)	Required Discharge (Cumecs)	Bed Width (In Mts)	F.S.D (In Mts)	Surface Fall	Side Slopes	A(m2)	P(m)	R(m)	R=2/3	Velocity M/Sec	Designed Discharge (Cumecs)	Due To Bed Fall	DueTo CM & CD Structures	Total	At Start (M)	At End (M)	At Start (M)	At End (M)		
20		354.825	354.875	50	TRANSITION		3.25	1: 11000								0.006	0.00	0.006	445.756	445.751	449.908	449.001		
21	11	354.875	356.100	1225	51.680	13.00	3.25	1: 10000	2.00:1	52.810	22.192	2.380	1.782	0.990	52.288	0.123	0.00	0.123	445.751	445.626	449.001	448.878	FULL CUTTING VARIES FROM 8.0M TO 17.0M	HDR,FF
22		356.100	356.150	50	TRANSITION		3.25	1: 9625								0.005	0.00	0.005	445.626	445.623	448.878	448.872		
23	12	356.150	357.483/358.000	1333	51.680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H.R.FULL CUTTING VARIES FROM 8.70M TO 17.0M	FSL @ KM 357.483/358.000 AS PER AGREEMENT +448.732

17.487

Co-efficient of Rugosity :0.018

Sd/-(dt.14.09.2007)
(I.S.N.RAJU)
Chief Engineer
Central Designs Organisation
Hyderabad.

GOVERNMENT OF ANDHRA PRADESH
IRRIGATION AND CAD DEPARTMENT
(H.N.S.S. PHASE-2,PACKAGE NO.9.
HYDRAULIC PARTICULARS HNSS MAIN CANAL(STAGE-II) FROM KM 353.000 TO 355.650

SL. No	Reach in KM			Hydraulic Particulars												Loss (m)			Bed Level		Full Supply Level		Remarks	
	From	To	Distance (IN Mts)	Required Discharge (Cumecs)	Bed Width (in Mts)	F.S.D (in Mts)	Surface Fall	Side Slopes	A(m2)	P(m)	R(m)	R=2/3	Value on 'n'	Velocity M/Sec	Designed Discharge (Cumecs)	Due To Bed Fall	DueTo CM & CD Structures	Total	At Start (M)	At End (M)	At Start (M)	At End (M)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	352.600	353.000	400	51.680	11.80	3.25	1 IN 12000	2:1	59.4750	26.334	2.258	1.721	0.018	0.873	51.921	0.033	0.000	0.033	445.952	445.919	449.202	449.169	APPROVED	
2	353.000	353.200	200	51.680	11.80	3.25	1 IN 12000	2:1	57.4750	26.334	2.258	1.721	0.018	0.873	51.921	0.017	0.000	0.017	445.919	445.902	449.169	449.152	FULL BANKING & BED FILLING	
3	353.200	353.250	50	51.680		3.25	1 IN 12000								0.004	0.000	0.004	445.902	445.898	449.152	449.148			
4	353.250	353.325	75	51.680	13.750	3.25	1 IN 12000	0.5/2:1	57.8906	24.65	2.35	1.77	0.018	0.896	51.87	0.006	0.000	0.006	445.898	445.892	449.148	449.142	PARTIAL CUTTIN & BANKING	SEE NOTES 2 & 3
5	353.325	353.375	50	51.680		3.25	1 IN 12000								0.004	0.000	0.004	445.892	445.888	449.142	449.138			
6	353.375	353.525	150	51.680	11.800	3.25	1 IN 12000	0.5/2:1	59.4750	26.33	2.26	1.72	0.018	0.873	51.92	0.012	0.000	0.012	445.888	445.876	449.138	449.126	FULL BANKING & BED FILLING	
7	353.525	353.575	50	51.680		3.25	1 IN 12000								0.005	0.000	0.005	445.876	445.871	449.126	449.121			
8	353.575	354.200	625	51.680	14.55	3.25	1 IN 10220	0.5:1	52.5688	21.817	2.410	1.797	0.018	0.988	51.922	0.061	0.000	0.061	445.871	445.810	449.121	449.060	FULL CUTTING	HR REACH
9	354.200	354.250	50	51.680		3.25	1 IN 11110								0.005	0.000	0.005	445.810	445.805	449.060	449.055			
10	354.250	354.325	75	51.680	13.75	3.25	1 IN 12000	0.5/2:1	57.8906	24.651	2.348	1.767	0.018	0.896	51.872	0.006	0.000	0.006	445.805	445.799	449.055	449.040	PARTIAL CUTTIN & BANKING	SEE NOTES 2 & 3
11	354.325	354.375	50	51.680		3.25	1 IN 11110								0.005	0.000	0.005	445.799	445.794	449.040	449.044			
12	354.375	354.500	125	51.680	14.55	3.25	1 IN 10220	0.5:1	52.5688	21.817	2.410	1.797	0.018	0.988	51.922	0.012	0.000	0.012	445.794	445.782	449.044	449.032	FULL CUTTING	HR REACH
13	354.500	354.550	50	51.680		3.25	1 IN 11110								0.005	0.000	0.005	445.782	445.777	449.032	449.027			
14	354.550	354.800	250	51.680	11.80	3.25	1 IN 12000	2:1	59.4750	26.334	2.258	1.721	0.018	0.873	51.921	0.021	0.000	0.021	445.777	445.756	449.027	449.006	FULL BANKING & BED FILLING	
15	354.800	354.850	50	51.680		3.25	1 IN 11110								0.005	0.000	0.005	445.756	445.751	449.006	449.001			
16	354.850	355.600	750	51.680	14.55	3.25	1 IN 10220	0.5:1	52.5688	21.817	2.410	1.797	0.018	0.988	51.922	0.073	0.000	0.073	445.751	445.678	449.001	448.922	FULL CUTTING	HR REACH
17	355.600	355.650	50	51.680		3.25	1 IN 10110								0.005	0.000	0.005	445.678	445.873	448.922	448.923			
18	355.650	356.100	450	51.680	13.00	3.25	1 IN 10000	1:1	52.8125	22.192	2.380	1.782	0.018	0.990	52.298	0.045	0.000	0.045	445.873	445.828	448.923	448.071	APPROVED	

3.504

- 1) The proposed modification of H.P.'s furnished vide Lr.no: CE/NTR/TP/DW/EE-1/DEE-1/AEE1/HNS/SP.09/1009.Dt.12-10-2015,are verified and approved from KM 353.00 to KM 355.650
- 2) The HP's are approved based on the data /recommendations furnished by the field authorities and the field authorities are responsible for the particulars furnished.
- 3)In Cutting & Partial cutting Reaches HR,shall be ensured by actual bore hole data before execution if there is any deviation the HP's shall be revised
- 4)List of structures shall be finalised separately on receipt of proposals as per site conditions and agreement from CE,NTR TGP ,Tirupathi and finally approval shall be obtained from CDO
- 5)Details of banks ,berams & dowels shall be followed as per IS 7112-1973 & IS 10430-2000 Typical cross sections may be referred to CE / CDO / AP approval
- 6)If any variation found in the field data the sae shall be brought to this office for revision.

Sd/-(dt.14.11.2015)
(I.S.N.RAJU) Chief Engineer
Central Designs
Organisation Hyderabad.

GOVERNMENT OF ANDHRA PRADESH

IRRIGATION AND CAD DEPARTMENT

(H.N.S.S. PHASE-2,PACKAGE NO.9.

HYDRAULIC PARTICULARS HNSS MAIN CANAL(STAGE-II) FROM KM 347.000 TO KM 347.550 & KM 348.300 TO 348.650

SL. No	Reach No	Reach in KM			Hydraulic Particulars										Loss (m)			Bed Level		Full Supply Level		Remarks	
		From	To	Distance (IN Mts)	Required Discharge (Cumecs)	Bed Width (In Mts)	F.S.D (In Mts)	Surface Fall	Side Slopes	Area(m2)	Perimeter (m)	R(m)	R=2/3	Velocity M/Sec	Designed Discharge (Cumecs)	Due To Bed Fall	DueTo CM & CD Structures	Total	At Start (M)	At End (M)	At Start (M)		At End (M)
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		347.000	347.550	550	51.680	12.70	3.25	1 IN 9650	1.00:1	51.84	21.892	2.368	1.777	1.005	52.081	0.057	0.00	0.057	446.460	446.403	449.710	449.653	F&f ,FULL CUTTING VAING FORM 9.40 MTO 13.10 M
3		348.300	348.650	350	51.580	14.40	3.25	1 IN 9650	0.50:1	52.08	21.667	2.404	1.794	1.015	52.852	0.036	0.000	0.036	446.292	446.292	449.578	449.543	HR ,FULL CUTTING VARIES FOM 8.50 M TO 15.0 M

co-efficient of Rugosity :0.018

NOTE :THE ABOVE HP'S ARE APPROVED BASED ON BORE HOLE DATA FURNISHED VIDE LETTER NO:1 CE(P) ATP /PHASE II /PK-9/485 CE DATED 22.12.2007 & LETTER NO .ENC TGP /SKHT /L.R NO ENC /TGS /DW/DD2/DEE2/AEE4/AVRHNS/PHASS II/PKG.9/27/DT.22.04.2008

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Sd/-(dt.28.04.2011)
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GOVERNMENT OF ANDHRA PRADESH
IRRIGATION AND CAD DEPARTMENT
(H.N.S.S. PHASE-2,PACKAGE NO.9.
HYDRAULIC PARTICULARS HNSS MAIN CANAL(STAGE-II) FROM KM 340.000 TO 347.100

SL.No	Reach in KM			Hydraulic Particulars								Loss (m)			Bed Level		Full Supply Level		Remarks	
	From	To	Distance (IN Mts)	Required Discharge (Cumecs)	Bed Width (In Mts)	F.S.D (In Mts)	Surface Fall	Side Slopes	Value of 'n'	Velocity M/Sec	Designed Discharge (Cumecs)	Due To Bed Fall	Due To CM & CD Structures	Total	At Start (M)	At End (M)	At Start (M)	At End (M)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	338.675	338.808/340.000		51.680	11.60	3.25	1 IN 10000	1.50:1	0.018							447.279		450.529	APPROVED HYDRAULIC PARTICLARS CONSIDERED AT END OF PACKAGE-8	
2	340.000	340.050	50	TRANSITION		3.25	1 IN 8400					0.006	0.000	0.006	447.279	447.273	450.529	450.523		
3	340.050	341.050	1000	51.580	12.00	3.25	1 IN 8650	1.50:1	0.018	1.169	51.785	0.146	0.000	0.146	447.273	447.127	450.523	450.377	DEEP CUTTING	S.P @ KM 340.220 SLRB @ KM 240.441
4	341.050	341.100	50	TRANSITION		3.25	1 IN 8650					0.007	0.000	0.007	447.127	447.120	450.377	450.370		
5	341.100	342.600	1700			3.25	1 IN 6900	1.50:1	0.018	1.147	56.918	0.248	0.000	0.248	447.120	449.573	450.370	449.823	PARTIAL CUTTING & PARITAL EMBANKMENT	SP @ KM 341.730 AQUEDUCT @ KM 342.200 AQUEDUCT @ KM 342.715
6	342.600	342.850	50	TRANSITION		3.25	1 IN 5900					0.007	0.000	0.007	449.573	446.556	449.823	449.816		
7	342.850	343.645/347.100	790			3.25	1 IN 6900	1.00:1	0.018	1.157	52.063	0.116	0.000	0.116	446.556	446.450	449.816	449.700		
8	343.645/347.100	347.150	50	TRANSITION		3.25	1 IN 8300					0.006	0.000	0.006	446.450	446.444	449.700	449.894		
9	347.150	347.550				3.25	1 IN 9550												HP'S ALL READY APPRVOED FROM KM 347.000 TO KM 347.550	

CHECK : TOTAL LOSS OF HEAD = 0.835 m
 DIFFERENCE IN FIRST FSL AND LAST FSL = 450.529 = 449.694
 0.825 m = TOTAL LOSS OF HEAD HENCE OK

NOTES:

- i) The proposals for Hydraulic particulars of AVR HNSS PROJECT Phase-II from Km 340.000 to Km 343.648/347.100 of Package-9 furnished vide Lr No.ENC/TGP/SKHT/DW/DD2/AEE/HNSS/ATP/P-9/146B DT 18-11-2010 are vetted as per Govt Memo No 26850/Maj Irr VI/2007 Dt :07-11-2009 subject to providing necessary protection works at curve location of IP Nos 4 as per site condations.
- ii) The first berm level in cutting reaches shall be at FSL + Free board.
- iii) The project authorites shall ensure that all CM & CD Works are proposed as per site condations and as per IBM estimate.
- iv) The alrady approved reach from 247.000 to km 347.550 is now revisedas km 347.150 to km 347.550 due to curve at IP No.4 i.e at jm 343.560 and 50 m transition proposed form 343.648/347.100 to km 347.150.
- v) Revised alignment and H.P's approved as per Govt memo no 25650,Maj.Irri.vi/2007 ;Dt 07.11.2009 and based on the recomandations of the ENC/TGP/Srikalahasti.ENC/TGP/Srikalahasti has to ensure that the orders of the Government in according the savings to Government and report to the Government.

Sd/-(dt.01.04.2011) Executive Engineer Canals-II Division Central Designs Organisation Hyderabad.	Sd/-(dt.01.04.2011) (I.S.N.RAJU) Chief Engineer Central Designs Organisation Hyderabad.
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